The Commercial Car Journal

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What ARE the Essentials of *MOTOR TRUCK SERVICE?*

NOT so very long ago, service was a subject with which the motor truck manufacturer did not care to become acquainted. The mere mention of the word among a group of manufacturers—who perhaps were engaged in the more interesting occupation of discussing sales plans, future production, and so forth—more than likely produced a shrug of the shoulder and a chorus of expostulations, which figuratively speaking, relegated the subject to the place where snow balls hadn't the slightest chance.

Naturally there were some exceptions. Some manufacturers did a little thinking. They believed that service was an essential element in connection with sales.

During the same period when manufacturers were reluctant to give any consideration to service, the dealer gave it even less. The dealers were trying to get by without giving service. Many had service station—mostly in name only. The dealer could at least say that he had a service department, but the customer usually found out differently. It sounded good to the customer—before the sale. The salesman even went the dealer one better. He promised a lot of service which no dealer on earth could give unless he happened to be a philanthropist. Service was actually the "missing link" in most dealer establishments.

Whether the owner patronizes the dealer's service station or the independent repair shop depends entirely upon the dealer. There is one thing certain, and that is—the owner will have the truck repaired or overhauled wherever he can get the work done the cheapest.

The shop that is properly equipped with labor-saving devices and good mechanics need not worry about "lack of work." Such shops have about all the work they can consistently handle. A visit to such shops will disclose even to the layman, the fact that those shops are utilizing modern methods and machinery. Hand methods have given way to power and speed. The managers of such service stations are always on the lookout for tools which will reduce costs. The service station should be a paying proposition for the dealer and not a loss.

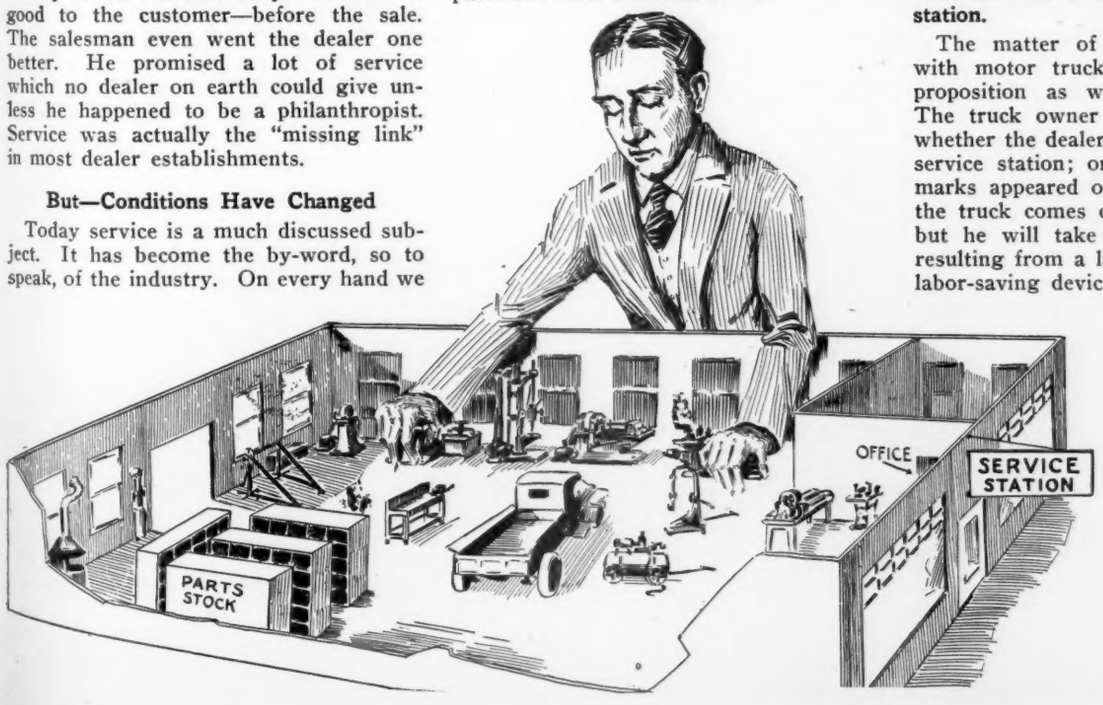
But—Conditions Have Changed

Today service is a much discussed subject. It has become the by-word, so to speak, of the industry. On every hand we hear—service, service, service! We doubt if there is a dealer or manufacturer who really has the interest of his business at heart and who is building for the future who has not given the subject a great deal of consideration, and who has not made some move to place his service department on a business basis.

In every branch of the industry, the question of serving the customer so that he will become a satisfied customer, a repeat order customer and all the other desirable qualities which the trade expects from an honest-to-goodness customer is the order of the day.

Unfortunately there are still many in the trade who do not appreciate the importance of the satisfied customer, but they are eliminating themselves very quickly. The motor truck owner is becoming wiser every day. He is beginning to compare notes on the service work. Often the statement is repeated "that trucks are being sold by way of the back door of the dealer's establishment," meaning, of course, that the owner is concerned about the parts stock the dealer carries, and the kind of labor-saving equipment he uses, and the mechanics he employs. If any dealer doubts that service is of great importance to the customer, let him **check up the reasons why he has lost certain deals.** He will unquestionably find that the concern that did get the business had a **better equipped service station.**

The matter of service in connection with motor trucks is not as finicky a proposition as with the passenger-car. The truck owner doesn't care a whoop whether the dealer has a rest room in his service station; or because a few finger marks appeared on the windshield when the truck comes out of the repair shop, but he will take exception to big bills resulting from a lack of proper tools and labor-saving devices.



Is YOUR Service Station Properly Equipped?

There are three important elements in motor truck service, namely: parts, shop tools and mechanics. The three are inseparable.

In other words, the dealer must first of all have a sufficient stock of parts on hand to eliminate lost time waiting for some part to come from the factory or the parts manufacturer. With the advent of the Parts Service Stations that are being established in various centers throughout the country, many dealers will be able to cut down their overhead on parts stock and still be in a position to give their customers first-class service. It will also permit the dealer to put more money in machinery and tools which are sadly needed in most dealers' service stations.

The fact of the matter is that only about half of the service stations operated by dealers in this country are sufficiently equipped with proper tools and labor-saving devices. In this respect the independent repair shop differs. The explanation for this is very simple. First of all, the dealer, as a rule, did not until recently give his attention to service as he has to sales. Consequently during the period when dealers were letting the service work slide away from them, and glad to get rid of it in many cases, the independent repair shops were getting the business which the dealer should have handled. On the other hand, the independent repair shop cannot be considered the last word in service facilities, that is taken at random. The reason for this is, that the independent shop cannot in every instance take care of a variety of makes on as low a cost basis as the **dealer should be able to service the truck he sells,** provided, of course, that the dealer has the labor-saving devices and the special factory tools on hand for doing the work.

During the war period shop tools were purchased as a means for saving labor—today they are needed to save money and time. Anyone who will take the trouble to consider the subject seriously will find that the real reason why many trucks are not periodically overhauled or sent to the service station more frequently is because the cost of service is too high. This does not apply to every truck service station, but it does apply to most cases. Many trucks are being operated today which are about ready to fall to pieces. The owners are reluctant to place them in the shop as they are afraid the bill will be staggering. And nine times out of ten it will be.

The question arises, "How can the service cost be reduced?" There is only one answer and that is: More labor and time-saving equipment. This doesn't mean necessarily that the repair shop must purchase a lot of machinery and tools and that by doing so the service problem will be solved automatically. On the contrary, there are many shops that have bought lots of tools that made nice playthings for the mechanics at the beginning, but sooner or later they were laid on the shelf and forgotten. Because a machine or special tool works out satisfactorily in one shop doesn't indicate that every shop in the country ought to be a buyer for that machine or tool. Every service station manager must decide for himself whether a tool that is brought to his attention is really going to save money for his customer. It may have saved money for the So-and-So shop around the corner, because that shop had a lot of work to do which could be speeded up with that particular tool, but it works out differently where the tool would be required only a few times a year.

But, on the other hand, take such a tool as a cotter pin puller. There are many mechanics who would rather fuss around four times as long removing cotter pins with an ordinary pair of pliers than use a special tool for that work. Just because "Jim" thinks the tool doesn't work out just to his liking he sells the whole shop on the idea that the tool isn't worth anything. And so the idea of using a cotter pin removing tool is tabooed in that shop.

The other day the writer visited a large service station, up to date in all respects. The shop was well equipped—lathes, drill press, burning-in stand, most everything in the big machinery line that the large shop should have, but a mechanic was leisurely removing cotter pins from the crank case bolts with a pair of pliers. Surely on such jobs a cotter pin puller would have saved considerable time. Every minute that can be saved in doing such work could at least be more profitably employed in the careful assembly of the part to be repaired.

Guesswork in too many cases takes the place of a micrometer gage. Valve clearances are checked by cardboard instead of feeler gages. Pistons are lapped-in to out-of-round cylinder bores instead of regrinding and fitting new pistons and rings; S-wrenches are used where speed wrenches would save lots of time; bearings are scraped-in instead of using boring tools; manually operated breast drills are used instead of the electric drill; in fact, any service station manager could enumerate many operations which are time consuming and which could be accomplished in one-quarter of the time provided the proper tools or machines were available.

Where the proper shop tools equipment is **not available,** the cost of doing a repair job must of necessity be higher than in the shop that is properly equipped.

It is the former shops that are advised to buy the machinery and tools which will enable them to advertise the fact in their locality that they have a real service station, and if they expect to meet the competition of the well equipped shop, they must have tools to do the work.

What greater asset could any shop have?

Don't "Give Him the Air" Before You Have Given Him a Chance to Demonstrate His Product. He May Have Something Which Will Save Your Shop Time and Your Customer Money.

If Your Stock of Parts is Not Properly Arranged the Customer is Paying for It

The "Cost" of

The High Cost of Service

If You Are in Doubt as to Whether Future Sales Will Really Depend on the Kind of Service Facilities You Have to Offer, Then Read This Article

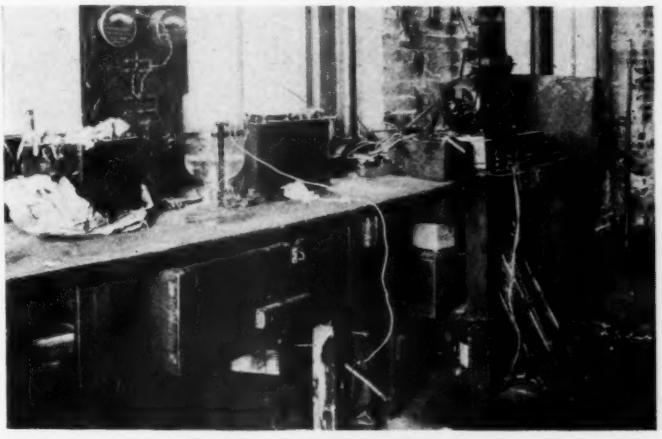
By C. P. SHATTUCK

THREE years ago this publication called the industry's attention to the need of giving the word SERVICE a real businesslike meaning. It was pointed out that eventually the merchandising of motor highway transportation would attain that high plane it deserves, when service was developed to that point when the seller of the truck could quote concrete costs to the prospect as to maintenance costs. Since that time the COMMERCIAL CAR JOURNAL has preached service consistently, showing by concrete examples how **satisfactory service sold more** trucks than glib salesmen or big allowances in trade-ins. It is the only trade paper in the field which is sending its technical service representative to the factories to obtain and publish factory methods of servicing units and truck equipment, which methods result in better work and reduce the cost to the service station and the truck owner.

High Service Costs Build Sales Resistance

During this time factory and dealer service associations have been organized. It must be granted that progress has been made, but to be perfectly frank the surface has only been scratched. The time has arrived when the factory, distributor and dealer must realize that present service methods are not conducive to sales; that is, generally speaking. There are those who will disagree with this statement, pointing out that they are rendering good service. **Some are.** Many are not. **More must.**

Just as the passenger car industry has awakened to the fact that to dispose of its 1922 production it must sell its product at the back door, i.e., the service station, so must the truck industry realize that from now on **trucks will be sold on costs,** not glittering generalities.. And these are maintenance costs.



An Increasing Number of Battery Departments Are Noted in Truck Service Stations

This dealer renders battery service. And why not? There is profit in it, and besides isn't it good policy to maintain service contact with the truck owner?

Truck maintenance costs, repairs and rebuilding, are too high. If the manufacturer expects to sell his product his interest must extend beyond that of manufacturing. He must follow his product through to the owner and see that he is protected from excessive maintenance costs. I venture to say that any truck maker will be surprised if he were to compile a list of standard repair operations and obtain costs to the owners on them from various sections of the country. He would find such a variance of costs that it would provide interesting food for thought. The sales department might also discover some facts having to do with sales resistance in certain localities. It is very probable.

Operating Costs Amazingly Variant

One factory executive made a trip among the dealers and owners and in discussing what he found with the writer, said he was amazed. He found that the same capacity truck operating under approximately the same conditions, and in different sections, had maintenance costs widely different. Now this executive was analytical, spent weeks among dealers and owners, and when he returned to the factory he gave the directors and executives some inside

The Small Dealer and His Shop

These are part views of the machine shop of a small dealer, in a small town in New York State, who handles much heavy-duty truck service

information that amazed them also. As a result radical changes were inaugurated and in due time sales picked up in those sections where sales resistance was reported by the wholesale men. Some dealers lost their agencies and some road men lost their jobs.

Why Should He Pay Top Price?

It is granted that there should be a variance in costs because the overhead differs, as does the human element, but the difference in the hour rate will not explain the marked difference in costs of certain standard operations which will be discussed in detail later on. There is no reason why the owner of the Warever truck in Hickville should pay from 30 to 75 per cent more for an operation than the owner in Boston. But he does. Why is he obliged to pay more?

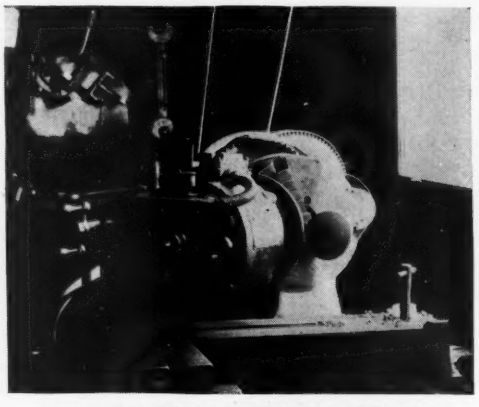
The reader will probably say that a skilled workman will do the work better and faster than the non-skilled. It is a matter of record that skilled automotive mechanics have not, and cannot for some time to come be developed in sufficient numbers to meet requirements, and by skilled mechanics, the writer means the real mechanic who can handle a lathe, shaper, milling machine, etc., and turn out accurate production and 100 per cent assembly.

If the reader does not believe the service managers are having trouble in obtaining skilled mechanics, and obtaining worth-while raw material to develop, let him attend any service association meeting and in the open discussion bring up the subject. Therefore, let's eliminate the mechanic from this discussion.

Machines, Not Humans, the Answer

Reverting back to the widely diverging cost figures, a survey would prove conclusively that the greater number of cases are, eliminating the labor equation, due to what the writer is pleased to call "antiquated" methods. Too many service stations or truck repair shops are victims of this disease. They stick to the old-fashioned, hand labor methods, passing the high costs of same on to the consumer, and when the customer kicks, or if an educated one calls attention to a machine method, he is informed that the old-fashioned hand method is a h—l of lot better. There are some who will not admit the practicability of a machine process over hand because of prejudice, ignorance or stupidity, despite the fact that the history of our leading industries is a story of the machine developments.

An Example of an Attractive and Well-Arranged Entrance to a Truck Service Station
Note the time clock so located that the clerk supplying work orders can see that time is stamped



A Portable Electric Grinding Machine
This serves a number of useful purposes and in this instance is being used to reface tungsten valves. Just previous it was employed to grind the lathe centers.

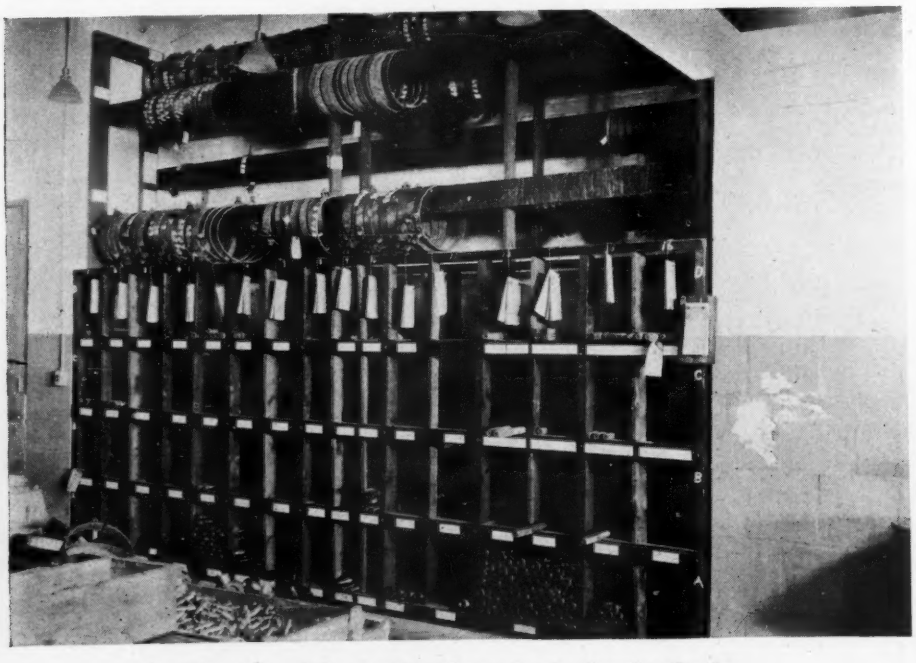
Why Costs Must Come Down

High maintenance costs must come down if trucks are to be sold in the numbers manufacturers contemplate the dealers should sell. The average truck dealer will say that sales are more difficult today than they were yesterday, and that they have to employ an unusually high grade of salesman, that the vendor of war times is useless; he has passed out of the picture. Trained transportation salesman are invaluable, we grant, but the best **will eventually run up against the stone wall of sales resistance if the maintenance costs are too high.** Service costs must come down if the manufacturer and dealer desire to reduce the sales cost per truck now and hereafter.

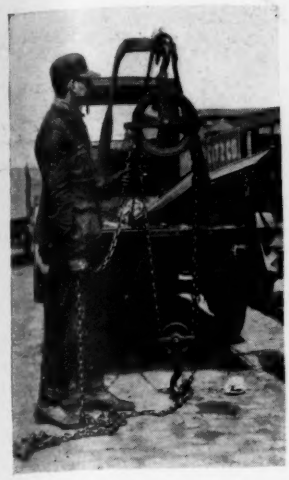
How Can Costs be Reduced?

Every dealer cannot reduce his service costs, overhead and costs to the customer. There are many who have only made feeble efforts **and more who have not.** It is to the last type, which includes the manufacturer as well as the dealer, that this message is directed.

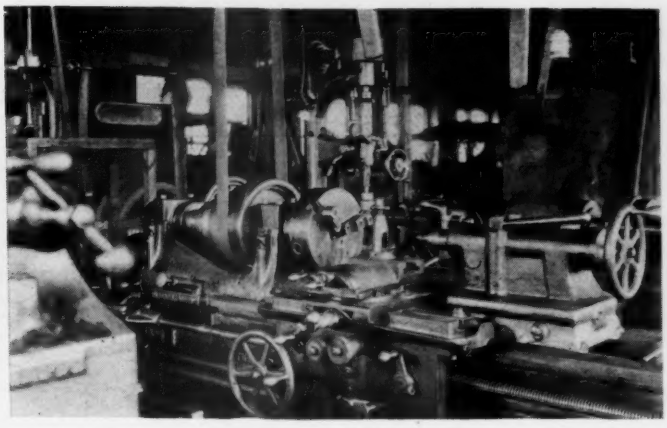
It is pretty safe to assert that the costs to the owner can be considerably reduced in the majority of service station and truck repair shops and that the 100 per cent place is yet to be developed. Wages are outside of the subject although it is very probable that certain machine operations may eventually be performed by



An Example of Conserving Space in the Service Station
The GMC distributor in Boston utilizes the space directly under the stairs for brake bands, and brake assembly parts are binned below

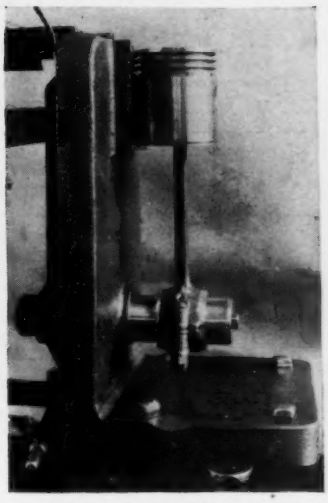


A Chain Block or Hoist Conserves Much Time



The Lathe Corner of an Independent Service Station in White Plains, N. Y.

Yes, there are machine shops in the city, but this shop finds plenty of work for the machine as well as avoids delays contingent on outside methods



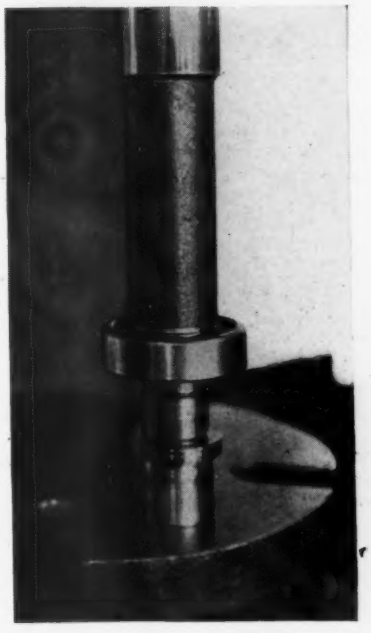
A Substantial Jig for Testing Connecting Rod Alignment

less skilled and less costly labor in the near future. Production methods during the war point the way. Already the service associations are sounding the slogan, "Lower Costs to the Owners." Probably owners are thinking in terms of dollars and cents, also.

How can costs be reduced simply by discarding old-fashioned methods and by adopting time and labor-saving ideas, tools, equipment and machines. Right here the small dealer will say here is where I stop reading any more of this stuff. I thought that the writer was going to give me some information that was worth something. He started off well, but—.

A Few Reasons for High Costs

The writer is well aware of the fact that there are some dealers who are sold on up-to-date methods, but who lack capital to buy a lot of high-priced machinery. To this type he says they can reduce service costs without buying a $3,000 machine by making a reasonable investment in smaller tools and equipment. For example, why should the truck owner pay from $1 to $1.50 an hour for the mechanic's time when he potters around with a brush and a can of gasoline to clean parts? The workman wanlers over and gets a requisition for the gas, hunts up the can and brush, then takes time to wash the part. Next he seeks for some old rags or waste to wipe the part, all waste motions for which the owner pays. Why not use a chemical especially adapted for this work, one which will clean the part quickly and cheaply? A cleaning tank and the solution are not expensive. Rags, waste and gasoline costs money, not much, but what about the labor charge? Why let the mechanic clean parts? Why not the apprentice? Why spend hours cleaning up the exterior of a power plant with gas and a rag when an engine cleaner operated by compressed air will do it quicker and better? Why should the owner pay $1.50 an hour for a mechanic to do a boy's job? And why not have a supply of compressed air at each mechanic's bench so that he will save time and expense in the assembly?



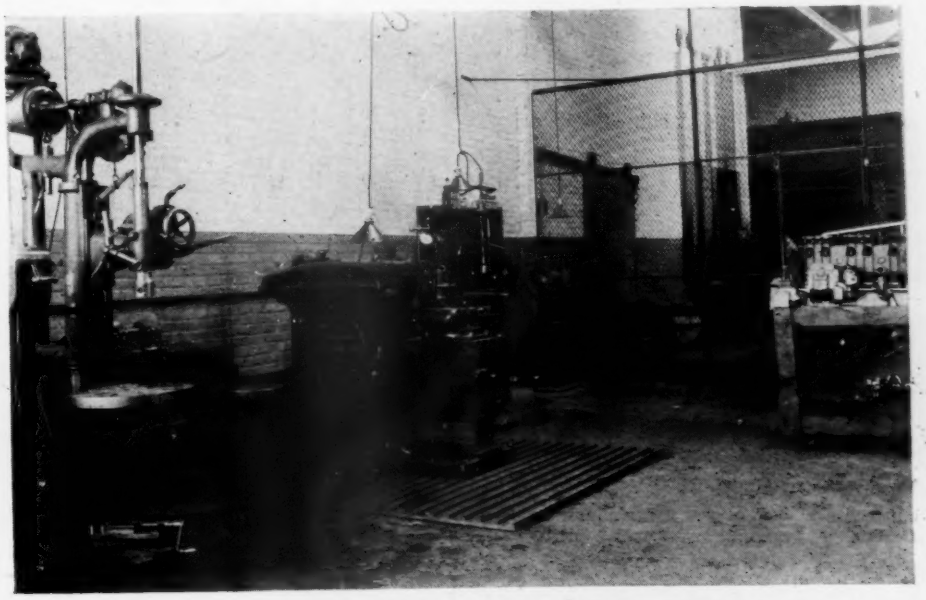
An Arbor Press is Indispensable

When pressing gears on or off bearings, etc., considerable time is saved to say nothing of avoiding damage to the part.

Reference was made to standard operations and varying charges. Take adjusting main, connecting rod or camshaft bearings for example and use same mechanic on two methods. One job is performed without a pit or hoist and without speed wrenches or the special tools adapted to the engine, the other with the work so arranged that the mechanic can sit, and with speed wrenches, etc., work quickly and comfortably. What will be the difference in hours? It will be worth while you can rest assured.

Use the Time Clock and Pencil

Suppose the crankshaft and cylinders are so much out of round that regrinding is necessary? Which will be quicker and cheaper for the owner—the shop with only a wood engine stand and no crane, hoist or chain block or one having all this equipment plus an overhead track ss that the unit can be easily and quickly shunted to desired location? If you are in doubt, Mr. Dealer, put a watch on the same make of unit handled under both conditions, then deduct the cost of efficient method from the inefficient and you will be surprised. Nothing has been said of the need of one or

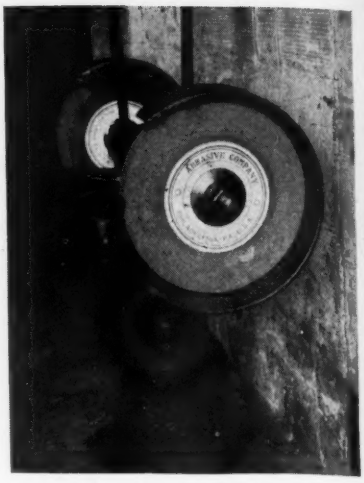


A Section of the Machine Shop of the Noyes-Buick Company, Boston, Distributor for G. M. C. Trucks

three extra men to juggle the power plant where there is no crane or hoist. These men have to be called from some job, do they not?

Why do so many shops build an engine stand that cannot be revolved to a desired position instead of using one that will save much time is a question. It is probably due to the fact that no concrete cost figures have been supplied by the makers of these stands. The writer knows of one manufacturer, about to enter this field, who is compiling time studies so that he can sell the repair shops on the profits or economies instead of a mechanical construction with claims.

Too many shops in the truck repair business today still believe that studs or nuts of a detachable cylinder head are best displaced by ordinary S wrenches. The dealer, or service manager for that matter, who allows this antiquated practice is as guilty of grand larceny as the bank cashier who absconds with the depositor's funds. Yet it is done daily. Why a mechanic should crawl under and manipulate an ordinary wrench to remove a nut or bolt when he could use a long speed wrench is not the fault of the mechanic, but the service manager and dealer. When it comes to service the truck industry could take a few lessons from the Ford service stations. They have all kinds of speed wrenches. **Why? To reduce costs to the owner and increase output of mechanic.** There is a great opportunity in the truck field for the truck manufacturer and wrench makers to develop speed wrenches for truck service stations. One well designed wrench could be used for a number of operations. The writer predicts that another year will see great progress made in speed tools for trucks.

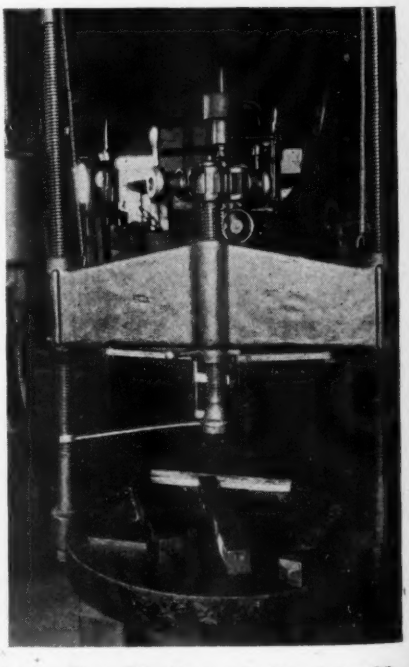


How About Your Engine Stand?

One of the factors contributing to high maintenance costs in truck service is the general lack of efficient engine stands. Too many shops construct the stand and few permit of turning the engine over by one mechanic.

May be Nice, But Too Costly

A few more examples can be quoted of inexpensive methods which will reduce costs. The fitting of main and rod bearings by hand by an experienced man undoubtedly results in a nice job, but the time factor is too high. The reaming of bearings is gaining advocates every day and when the tool is used properly the job is 100 per cent and the time saved several hundred per cent in hours and dol-



Heavy-Duty Machinery is Receiving More and More Attention From the Truck Service Station

This press is an example of the tendency to discontinue sending work outside. This dealer argues that he needs the profit and his customers prompt service.

Service Station Equipment

Machinery

Lathe and Tools
Drill Press
Sensitive Drill
Straightening Press
Grinder
Power Hack Saw
Cylinder Grinder
Cylinder Reboring
Crankshaft Grinder
Piston Grinder
Bench Grinder
Arbor Press
Air Compressor
Milling Machine
Portable Electric Drill

General Equipment—Time Saving Apparatus

Engine Stands
Chain Blocks
Portable Work Benches
Portable Crane
Portable Carbon Cleaning
Creepers
Turntables
Wheel Alignment Gage
Wheel Carrier
Wheel Pullers
Parts Stock Bins, Etc.
Wrecking Outfit (Truck)
Grease Pumps
Waste Cans
Fire-Extinguishers
Lockers
Battery Hydrometer
Anvil and Forge
Jacks
Welding Equipment
Cleaning Tanks
Wrenches
Speed Tools
Gages—All Types
Clamps
Micrometer Calipers
Vernier Calipers
Drill Gage
Dividers
Screw Pitch Gage
Spirit Level
Soldering Outfit

Tools Needed for Engine Overhauling

Cleaning

Engine Cleaner
Air Compressor
Carbon Scrapers
Cleaning Tanks

Removing

Crane, Portable
Hoist
Chain Block
Tracks (Overhead)

Disassemble

Engine Stand
Auto Table
Work Bench
Gear Pullers
Vise
Punches
Wrenches
Pliers

Bearings

Boring Machine
Reamers
Running-in Machine

Connecting Rods

Straighteners
Aligners

Pistons

Gages
Grinders
Ring Tools
Ring Grinder
Piston Vise
Piston Ring Compressors

Cylinders

Taps and Dies
Dial Gages
Grinding Machine
Reboring Machine
Welding Equipment
Welding Table
Preheating Furnace

Crankshaft

Grinding Machine
Straightener Press
Lapping Machine
Stand
Micrometers
Calipers

Wrist Pins

Grinding Machine
Drill Press
Arbor Press
Reamers

Valves

Lifters
Recutters
Surface Plate
Spring Scale

Bushings

Lathe
Reamers
Drill Press
Electric Press
Calipers
Micrometers
Pullers
Drills
Power Hacksaw

Tools and General Equipment for Axle Overhauling

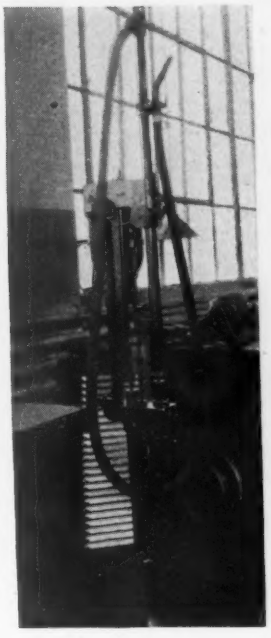
Jacks
Wheel Alignment Gages
Stands
Forge, Anvil & Tools
Wheel Pullers
Gear & Pinion Pullers
Welding Equipment
Grease Pump
Arbor Press
Brake Lining Tools
Spring Leaf Spreaders
Shackle Bushing Reamers
Grease & Oil Guns

lars and cents. There is one engine on the market that has its bearings line reamed and the writer has inspected a number of these assemblies at factory and found the results all that could be desired.

There are some who argue that all valve work should be done by hand. Good results can be obtained by machines. Hand work may be better although it is doubtful, but even the advocates of the old methods would object to the cost if they had to pay for the work. It is easy to pass the buck to the other fellow, but the pastime is losing its popularity with the customer who pays freight.

Equipment for Relining Brakes

The old hand method of relining brakes is a thing of the past in up-to-date truck service stations. This equipment drills and countersinks.



An Unusual Location of a Fuel Pump

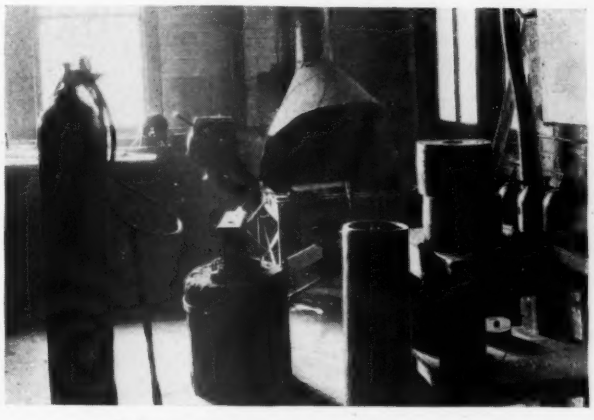
This Gilbert & Barker pump saves the time of the mechanics. Of course a check is kept on the fuel used.

Another Type Brake Lining Machine

This machine was recently brought out by a well-known maker of brake lining. It is used for riveting only.

At the present time there is much talk of compulsory brake tests, i.e., compelling owners of trucks to have their brakes inspected to see if they conform to certain requirements. In some places this has been practiced. A certain traffic court magistrate of one of the largest cities addressed a service association on accidents and their cause and effect and urged the service heads to educate their owners to keep the brakes efficient, to sell the owners on the need of good brakes. The service men said they were strong for such a plan, but did the judge know that the average owner balked when told he needed new linings because of the cost. In other words, the price was too high. And so it is with the ordinary conventional methods, but with improved facilities the cost is brought down. What is the difference, dollars and cents in cost, between the old hand method, cold chisel, drill, vise, rivets, countersink, and hammer and that shown by the machine in an accompanying illustration.

The writer could go on at great length making comparisons between antiquated hand and machine or tool methods with the same result. If a number of standard operations along the lines described were listed, and the time required by old and improved methods is figured out in hours and time is money, the number of hours saved would be astonishing. Multiply the number by $1.50 and it will make quite a sum. It is always the labor charge that starts the customer for the claim adjuster or to the office of the dealer. He may think the list price of parts is high, but **he knows what the price is** which is more than he does when it comes to a repair job. The owner never will be educated to that point where he will understand that it requires two hours to get at a part that will require 30 minutes to adjust. The automotive industry is a score of years old and owners are still in doubt.



The Forge Outfit

Servicing heavy-duty trucks requires a complete forge outfit and in well-equipped stations the welding and carbon burning equipment will be found adjacent

Time Conserved Saves Money Two Ways

Maintenance costs must come down for another very simple reason, and that is, if a five-hour job can be done in three by improved methods then the owner is saved two hours' idle time of the truck. Now it is well known that fixed charges continue when the truck is in the repair shop. And with the larger capacity truck the fixed charges are no small item even when figured on a daily basis. The less time the truck spends in the service station the less costly to the owner, and the better he will be satisfied.

Why is it that the service stations of the truck dealers are not better provided with time and labor-saving equipment, machines and tools? There are three simple explanations:

First, the truck dealer has been more concerned in sales than in service.

Second, the service manager is a mechanically inclined person. He is very seldom a salesman. If he was he wouldn't be riding the bumps he has to as a service manager. He may appreciate, be convinced, sold and a booster for the equipment but he **cannot always sell the boss.**

Third, and this criticism is made constructively, the bulk of the machines, tools and equipment of makers of such is distributed through machine or equipment jobbers whose salesmen lack the actual, concrete, overalls if you please, experience in service work. The point is that the service manager may see and grasp the mechanical features of the machine, but when he asks the boss for the appropriation he can't sell him. And the jobber's salesman can't always either for he lacks the one great selling appeal, the placing before the buyer of real, concrete, acid test **figures showing the saving in dollars and cents the new machine would accomplish in comparison with the old methods.** If there are any manufacturers who have such data the writer will be pleased to hear from them.

It's the Last Cost That Tells

The writer hazards the prediction that truck manufacturers are going to be more interested in the future in time and labor-saving machinery and tools that their dealers use, and that they will conduct experimental work to determine the best and most efficient ones before endorsing them. And there is very likely to be greater co-ordination between the dealer's service manager and the factory service manager. The last named in turn will co-ordinate with the service engineer and other engineers so that service may be placed on a high, simpler and less expensive plane. Just as improved machines have made possible big production and lower cost to the purchaser in other industries so must the truck industry bend its energies to lower costs. **Service costs must come down.**

Reduction in Piston Ring Prices

All standard sizes of the automatically hammered piston rings, products of the American Hammered Piston Ring Co., of Baltimore, have been reduced to 60 cents. Special sizes, five inches and above, however, command a somewhat higher figure, while the Special Ford type ring is placed at 50 cents. The manufacturer states that the large volume of production and sales during the past two years have made possible the new price.

Large Service Station Develops Time and Labor Saving Devices

Systematic Handling of Parts Just as Essential as Tools and Machinery. Right Equipment is Not Out of Reach of the Smaller Service Station

By JAMES W. COTTRELL

THE three elements essential for service on trucks are—Adequate Stock and Supply of Parts, service Station Equipment and Personnel. Proper service cannot be given with any one of these three missing.

The personal element enters into the service problem very appreciably. The executive work of the dealer or the branch officials, the contact men, service salesmen, the road men and the mechanic in the shop all must work as a unit to give service to the customer.

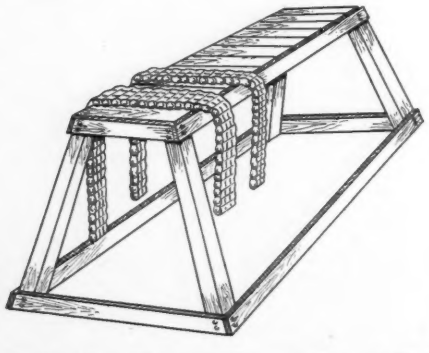
But without proper equipment, all the skill and determination in the world cannot accomplish good results. Certain individual jobs on trucks cannot be done at all **except with special tools; others cannot be done without a large waste of time** unless the special equipment needed is at hand.

And without the needed parts, skill and equipment are of no value at all. Heavy duty trucks especially are usually worked hard. Long hours, heavy loads, bad road conditions and the vital necessity of delivering the goods, no matter what happens, result in broken parts and when they are needed they are needed badly.

To give proper service on trucks requires a COMPLETE stock of parts. Such a stock will take up quite a lot of room and it will run up into money, a lot of money.

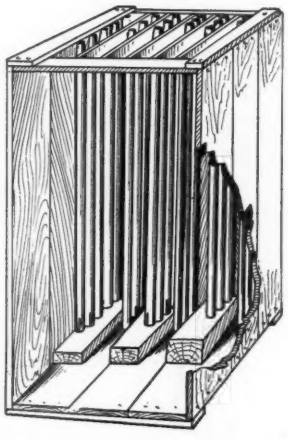
The Small Town Dealer

Dealers in the towns and smaller cities have a job on their hands in solving the problem of service. The volume of sales and other factors do not warrant the carrying of a complete stock of parts, nor does the volume of repair work justify the installing of ALL the service station equipment needed to do EVERY job in the most efficient way.



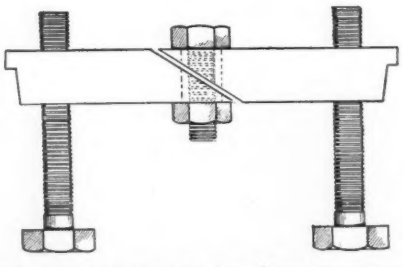
Chains Are Hung Over the Top of This Stand to Relieve the Task of Lifting Heavy Chains to a High Peg

These dealers are, so to speak, on the firing line. When the attack comes, in the form of demands from customers, they do all they can to handle the situation. If they cannot handle it the factory, branch or distributor must furnish the reserve to back up the dealer. The distance such a "reserve" service outfit is away from the dealer and the real ability of the reserve service to take care of the dealers' demands is something which every dealer should carefully investigate, as it **is a matter of interest to the individual truck prospect and truck owner.**



This Stall Provides Space for Long and Short Shafts in Same Compartment

A prospect, nowadays, who will buy one or more trucks without being satisfied that he can get service of the right kind is rare,—"there ain't no such animal." And he looks to the dealer for the service. If the dealer's establishment can supply it, well and good; if it cannot then the dealer must show that his facilities backed by a nearby reserve will answer the calls likely to be made upon it.



This Special Puller for Bearing Cones Takes Care of Particularly Difficult Jobs

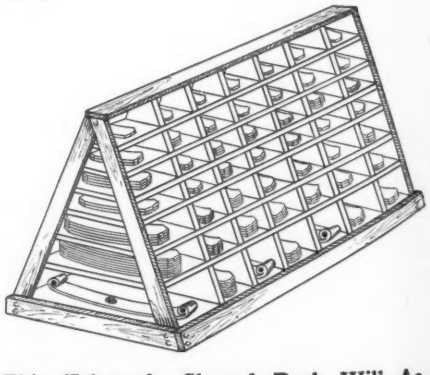
The Mack factory branch service station at 23rd and Chestnut Sts., Philadelphia, is an establishment operated to take care of the service of hundreds of trucks used in the vicinity and also to furnish to dealers in nearby territories reserve service which they cannot handle themselves. In an interview with Mr. Homer, the Service Manager, the following information about this service station was secured.

Provides Service for 2600 Trucks

There are about 2,600 Mack trucks in the territory served by the Philadelphia branch, and of this number about one-half are supplied with Service by the branch. Almost all owners of one to three trucks get their service from the branch. Owners of large fleets, in many instances, conduct their own service stations.

The Mack branch occupies three floors of a large corner building. The first floor front is used for sales and show room with a balcony to hold the business offices. In the rear of the first floor is a space used for storage of trucks and the elevator. The stock room, shipping room and carpenter shop occupy the second floor and the shop is on the third floor.

The shop is well equipped. Because the large service stations seem to be well equipped, many dealers and independent service station men take little interest in them. But this Mack station is an exception to such a rule. Some of the methods used there can be applied to any shop, large or small. Many, dozens in fact, of the tools and appliances can be used in the smallest shop and their cost does not put them out of reach of these places. The volume of work being done shows that they are a necessity in a large shop.



This Triangular-Shaped Rack Will Accommodate the Various Sized Leaves for 23 Different Make Springs

Lots of Room in the Shop

The first impression of the Mack shop is roominess. There is quite enough room to hold the trucks being worked on and all the equipment without crowding. There is a small office made of glass and wood partitions, a small radiator repair shop, also partitioned off; the rest (except the tool room) is just one big room.

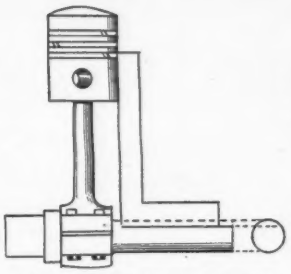
The trucks being repaired are lined up facing the front of the building, a heavy work bench running the entire length of the front. At intervals, corresponding roughly to the width of a truck, are large vises. Heavy wooden trestles or "horses" are used to hold units such as transmissions and engines while being repaired. There is one engine stand in which engines can be bolted and turned at any angle as needed in working on them. This stand is used at times when the nature of the job requires it.

In the rear of the shop in one corner may be found the machine shop and tool room. The equipment consists of a lathe, sensitive drill, large drill press, power hack saw, shapers, double grinder and a press. Power is furnished by an electric motor.

The tool room is noteworthy for the large number and variety of tools, conveniently arranged in an unusually small space. The room is bounded by strong iron grating. There is a "Cashier's Window" for issuing tools to mechanics and a side door for the tool room attendant. Tools are issued on a checking system. Each mechanic has ten checks and gives one up for each tool taken out, receiving the check back when the tool is returned. One machinist takes care of the tool room, issues the tools, keeps the tools in shape and does the machine shop work for the shop.

Mr. Homer stated that an important advantage of the machine shop equipment was in making various special tools used in the shop. A few of these tools are applicable to certain models of Mack trucks only, but most of them are of general interest and application. And many of the special tools have been made right in the shop.

For instance, a puller was made for taking magneto couplings off the armature shafts. Hammering on the coupling or shaft has a tendency to weaken the magnetism in the magnets. The puller saves time and also magnetism.

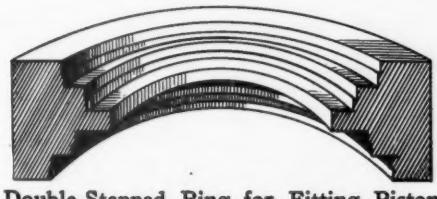


Simple Method of Testing Connecting Rod Alignment

Special Shop Made Valve Guide Puller

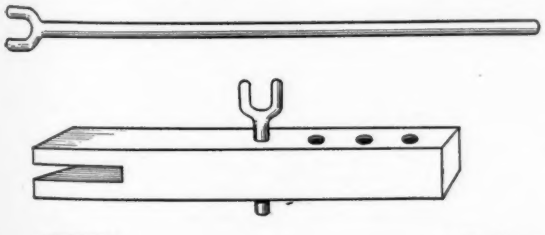
A double stepped ring is used for fitting piston rings. The various steps are turned up the same size as the cylinder bores with the standard oversizes for regrinding. Rings can be fitted in the proper step much quicker and better than in the cylinder itself and the rings will fit the cylinders when installed, as the ring step selected is exactly the same size in diameter as the cylinder.

A simple but accurate method of testing connecting rod alignment is used. A bar



Double-Stepped Ring for Fitting Piston Rings. Rings May be Fitted Quicker and Better by Reason of This Device

turned up the same size as the crankshaft is clamped in the lower connecting rod bearing. A square is placed on a flat surface made in the bar and the other leg of the square goes along the side of the piston. For testing twists in the rods the piston is taken off and a bar about a foot long put in place of the piston pin. The larger bar is left in the lower rod bearing. The bar is placed in two accurately machined and finished V-blocks on a face plate, and if the rod used in place of the piston pin is not parallel with the face plate a twist is indicated and its extent and direction can be easily measured.



Showing the Three Units of a Specially Made Valve Lifter. It Can be Employed on Any Make Truck Engine

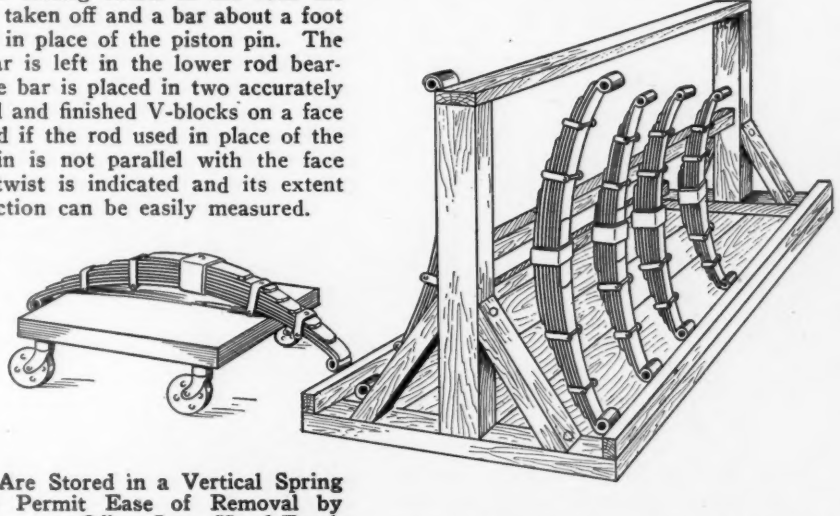
Pulling valve guides with the cylinders in place in the engine proved to be a troublesome job. It was not easy when the cylinders were on the bench. So a valve guide puller was made. It consists of a threaded valve cover with a hole in the center through which a long bolt is passed. A collar on the bolt, long thread, a nut and washers complete the tool. This was also made in the shop.

A special puller for bearing cones has been made and it takes care of a particularly difficult job. One cone was so mounted that it was impossible to drive it out if it stuck unless holes were bored in back of it. The little tool shown does away with this trouble. It consists of two pieces of steel mitered at the ends and held together at the center by a bolt and nut. In each piece there is a long bolt in a threaded hole to apply the pushing pressure. The center bolt is loosened and the tool pushed up in place. Then the tool is pulled out wide enough to hold on the cone. Then the center bolt is tightened and the two side bolts are then used like those in a regular wheel puller.

The valve lifter shown is used because of the very strong valve spring tension used on these trucks. It consists of three parts, square block, fork and hook. The block is of steel with a slot in the end to fit over the top of the frame. In the other end of the block are three or four holes in which the fork is placed. The long forked bar raises the valve spring. On another model a hook is hung on the manifold to support the rod.

Drills, taps, dies, and reamers of the right sizes are the foundation of successful repair work is the opinion of the Mack Company's machinist. In their tool room these tools are placed on shelves inclined at an angle of about 30 degrees. Little wooden strips divide up the spaces and indicate just where each tool is to go. An electric power valve grinder is used and has proven itself to the extent that another one will be ordered.

The second floor stock room carries a stock valued at about $120,000. The arrangement of the various bins and shelves has been carefully planned and changed



Springs Are Stored in a Vertical Spring Rack to Permit Ease of Removal by Tipping on or Off a Low Hand-Truck

frequently as better methods are found. Handling heavy truck springs is one of the hardest jobs in a stock room. They are so heavy that it is hard to put them in place and equally hard to get them out for shipment. In the Mack stock room springs are stored on end and in a posi-

tion almost vertical. The spring rack is, roughly, triangular in shape on the end. Cleats nailed on the floor of the rack and pieces running lengthwise of the rack provide for springs of different sizes. The springs are brought up on the elevator on a low hand truck. By placing the truck right, the spring can be tipped right up into place and can be tipped back the same way to load when it is to be shipped. By this plan the full weight of the spring does not have to be lifted by the stock room man and one man can place and take out any of the springs.

Racking Up Springs

Although the replacing of one broken leaf in a spring is not recommended by the Mack Company, they carry a stock of separate leaves. There are 23 different springs in stock running up to 17 leaves in the largest spring. At present these leaves are carried on double-deck shelves, but a rack is being constructed to hold them.

The new rack will be triangular shaped on the end and will have the longest leaf at the bottom and the shortest one on the top. One leaf of each style will be bolted in place and painted red to serve as a guide in placing spring leaves in the rack. There will be 23 compartments in the new rack, one for each style of spring.

Chains were formerly hung on end from pegs against the wall. While this scheme kept the chains in the smallest possible space, the weight of the chains made it very hard to put them in place and get them down again. A chain rack was made triangular again and they are hung over the top of the rack with ends toward the floor.

A stall is used for drive shafts and it provides space for short and long shafts in the same compartment.

A complete little carpenter shop is rather a novelty in a truck service station. There is one carpenter in the Mack organization. He makes some of the boxes for shipping parts, repairs floor boards and other woodwork and makes the stock racks and bins. Almost all of the bins, racks and shelves in the stock room were made out of lumber from boxes in which parts were received.

A perpetual inventory is kept of the parts in stock. A maximum and minimum have been set for each part. When the minimum is reached a factory order is put through for enough parts to bring up the stock to the maximum and the sales likely to be made while the parts are on the way.

The shop is managed by the Service Manager, Mr. Homer, who has an active working foreman and a timekeeper to assist. These three constitute the entire executive force of the shop. The mechanics employed number from about 25 to 35, according to the season and general business conditions.

One radiator repair man is employed. His little shop, in the corner of the main shop, has light from two sides. It is not large, but it is well equipped with needed tools. In testing radiator sections a special rubber gasket and end plate is put on each end of the section. Air is pumped in with an ordinary foot pump and the section immersed in water. The special end plates can be put on and taken off in a minute or two and save the time and cost of soldering sheet metal ends in the sections.

The shop is kept clean and in order. This fact is quite noticeable. Repair work in the shop is stopped fifteen minutes before quitting time and the mechanics straighten up things on the various jobs, put tools away or in order. The general cleaning of the rooms is done by janitors.

Outside Service

A Ford runabout with small express body, a small Mack truck and a large Mack wrecker truck are used to furnish service on calls outside the shop. The Mack wrecker is similar to ones used in the U. S. Army. It is a short coupled job with a low gear ratio. There is a power winch, heavy block and tackle, and a tripod crane for pulling out wrecks. Jacks and blocking are carried in compartments. There are several oil lanterns, a heavy steel towing bar and, of course, some tools.

Service station men are sent out to dealers' establishments on call to help the dealers on particularly difficult jobs.

Right Service Station Equipment is Not Prohibitive in Price

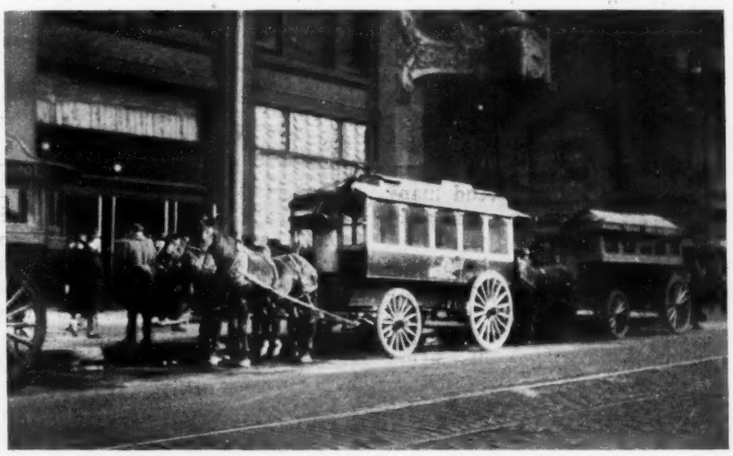
Proprietors of smaller service stations sometimes try to excuse their lack of equipment by the statement that the proper layout will cost so much that it would not pay to install it. The equipment for giving good service need not cost a prohibitive amount. The quantity and quality of service given by the Mack Philadelphia Branch is being given with an investment in machinery and equipment which is moderate indeed, all things considered. We have in mind one garage in a town of less than 10,000 population which has a machine shop equipment quite the equal of the Mack machine shop. The right equipment is not out of reach of the smaller shops.

Equipment Needed to Bring Business

Truck operation, nowadays, is being figured on a strict business basis. Every item of expense is being closely watched and investigated. Cost of maintenance and repairs is coming in for an unusual amount of attention. The shop with equipment to do work efficiently will turn in lower charges for any given job than one not properly equipped. In some localities shops are soliciting repair work actively and regularly. If there is not enough work for all the shops, will the shop with equipment or the one without it get the business?

GMC Production Increases

Production and sales of the General Motors Corp., of the motor car division for the first three months of 1922 will approximately double business done during the corresponding period last year. Sales reported during January and February were in excess of 36,000 cars. March production of cars is at least 50 per cent ahead of February, with commercial cars coming in for a fair share of the business.



No, this picture was not taken in front of the general store of a small country town. It was taken in front of what is considered the finest retail store in the world, the Marshall Field store, in Chicago.

These horse-drawn buses carry shoppers between this store and the Chicago & Northwestern depot, the depot, as well as the store, being noted as one of the handsomest buildings of its type in the country. The buses and the horses, judging from appearance, date back to the era of the big Chicago fire.

Looking at this picture, and taking into consideration the wonderful institutions at either end of this antediluvian transportation line, the thought naturally occurs to us:

"What is the matter with Chicago motor truck salesmen?"

It is very evident that the buyer of transportation in Marshall Field's is not responsible for the progress made in other departments of this great establishment.

Scheduling Work in the Repair Shop

"My Shop Cannot be Improved! It's Up-to-Date" *Is It?*

This Article is the Product of an Exhaustive Study of Service in All Its Ramifications, by an Authority on the Matter. Use This Outline as a Comparison and Check Up

By J. H. RADEBAUGH, College of Engineering, University of Illinois

WE cannot resist the conviction that the reason for so many confusions surrounding the management of the auto repair shop is that the principles of scheduling have not been fully appreciated or used. Every useful scheduling plan that has been successfully used by manufacturers and that can be applied to the garage should be used.

How many struggling enterprises would gain a solid underpinning if the operators would practice business analysis? It is apparent that it pays to face our business in a most scrutinizing manner, make an analysis of the methods used and results accomplished. This can be done in several ways. One method is to remedy any conditions that are eating up profits.

Here are a few questions that any garage manager can ask himself:

How does the business respond to my leadership?

Are the methods by which I carry on my business really doing the things I expect them to do?

Do scheduling methods in a repair shop interest my customers?

Are they satisfied with my methods of shop control, such as charges for labor, material, supervision of workmen and delivery promises?

What are the most effective methods to secure—

(a) Productive labor in the shop,
(b) Store-room control,
(c) Satisfied customers?

Do I know how many promises have been made for finished jobs and the exact time they were promised for today's business?

How many jobs are in the shop today for repairs?

How many chargeable hours do my men put in each day?

How many non-chargeable hours?

Do I get the benefit from a full day's work in the shop?

How much do I lose by workmen coming in late and by padded job costs?

What profit each do I make from each man employed?

How much stock and supplies are wasted each day by careless shop methods?

Garage managers are seeing the dawn of a new day. They must have reliable methods by which the activities of the business can be controlled. They must establish a definite policy in the organization of the shop. To do this, certain established facts must be reviewed and applied to the methods employed to carry on our business. Effective control of a shop may be secured through the following essentials:

Organization

(a) Type of organization; the dividing of the business into departments; department control.

Promise of Work

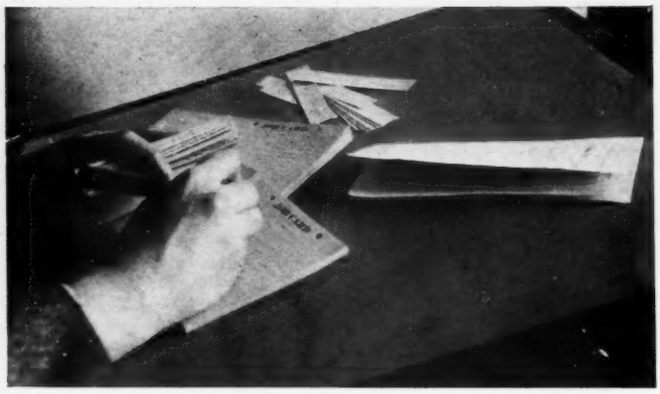
(a) In taking a job, make a reasonably close promise as to when work can be delivered (scheduling job through shop). Receive an order and give estimated cost. All work must be standardized where possible.

(b) It should involve methods to assign work to the shop in the most effective manner.

(c) A method should be employed to present a graphical record of every job received in the shop and the time it is promised for delivery.

Keeping in Touch With and Scheduling Service Work

Above: Foreman choosing next job ahead, thus eliminating any loss of workman's time between job changes. Lower left: Workman taking job card from Next-Job-Ahead hooks, directly following the completion of last job. Lower right: Workman adjusting schedule clock to starting time. This is done when placing job card on hooks, job being worked on.



Service Manager, Foreman or Office Man Writing Out Order on Job Card.

A stub record same as check book stub is kept for filing and office record.

Time Records—Labor and Delivery

(a) To provide suitable job and cost records that will absolutely guarantee to both the customer and the business an accurate charge for all cost activities pertaining to the job.
(b) The plan should relieve the mechanic of excessive clerical work.
(c) The starting and stopping time of the men in the shop should be controlled and recorded by standard methods.

Store Records—Material Used and Material to be Ordered

(a) All stores and supplies should be controlled so that they can be issued only when receiving cash or when charged to the customer.
(b) A perpetual stock inventory should be kept of stores. This includes gas, oil and grease.
(c) Methods of controlling the use of oil, grease, gasoline, waste, etc., in the shop, and service station, must be provided.
(d) Methods of ordering and receiving stock are necessary.

Cost Record—Combination of Time and Stores

(a) All charges of material, supplies and labor should be so made that when the work is completed, an invoice can immediately be issued to the customer.
(b) Proper pay methods must be employed.

Repair Shop Control

(a) Effective shop methods are necessary for storing cars, repairs, washing, polishing, cleaning parts, scrap storage, return shipments of guaranteed parts to manufacturers, bench arrangement, tools and their care, light, heat, drinking water, fire protection, lockers and wash room.
(b) Effective methods of storing cars and collecting for same are required.
(c) Methods of educating the mechanic in better workmanship and more efficiency should be developed, including an apprentice system.

Not all of these essentials can be incorporated in every garage but some of them can be applied. If jobs are to be effectively controlled, a place must be provided where records can be made and the activities of the shop carried on.

An office for the use of the shop foreman, with the facilities for scheduling the work, is one of the important essentials of effective service station control. In Fig. 1 is shown a general view of a type of office installed for shop foreman. This office is about 10 ft. x 12 ft. x 8 ft. high; distance from floor to glass, 4 ft. The time clock, work order card case, schedulegraph, desk and telephones, are all located here. This gives a central point in the shop for transacting such shop business as may come up. In choosing the location it should be made with the idea of its convenience to customer and shop men. All orders for repairs are received at this office, the customer and the shop foreman review the car troubles. This gives the shop first hand information, and also permits the customer to come directly in contact with the man who sees to the repairs on his car.

When we recognize the many important conditions entering into a service or repair job there is good reason to see why objection arises so often over work performed and the price charge for labor and material. The customer is individually interested in his own job while the shop superintendent should be vitally interested in several. Poor instructions are one of the many faults of the present method of taking a job for repair. If you can get the customer and the shop superintendent to discuss the repair problem you have to some extent eliminated chances for mistakes. It is obvious, however, that a record should be made of the things to do on the job at the time when the customer is giving his suggestions and instructions to the shop foreman.

The importance of the job card is not fully appreciated among the smaller shops; it is however considered by expert accountants and production men to be one of the most effective agencies the small shop as well as a large shop can employ for effective control of jobs in the shop. The job card is a necessity. A business that does not take advantage of their use is only delaying the cause of better business. In Fig. 2 is shown the job card being filled out, a stub record same as check book stub is kept for filing and office record.

Customers Must be Retained by Reason of Good Service

Customers are too often disappointed in promises that are made on delivery. The foreman of the shop without suitable records and effective schedulings control is handicapped in stating when work should be completed. Without records of jobs in the shop he must rely on "guessing" for delivery. The garage which will take advantage of the principle of scheduling can eliminate all uncertainty as to promises of finished work. There are several very simple methods that may be employed. The use of a blackboard making entries of all jobs recorded with dates promised is a plan that can be used very successfully. To make your scheduling plan a positive check on delivery and time requirements the job assignment and control calendar, as shown in Fig. 3, will be found helpful; in this view the foreman is choosing the next job ahead, thus eliminating any loss of workman time between job changes.

The schedulegraph can be located in the shop or in the office. The size of the shop of course influences its location. It is advisable to locate any type of scheduling plan convenient to workman and foreman.

In using this scheduling device the foreman by reviewing jobs already assigned to workman can make his decision as to the man best fitted to do the job, the decision being based on the following essentials: (A) Is the workman qualified to do the job? (B) How many jobs has he ahead? (C) Is it possible for him with job ahead to complete this job on time specified? (D) Has the customer a preference as to who should work on his car? (E) Are all material and supplies required to do the job on hand? (F) If a rush job, what man can be changed from another job in order to complete rush job? After the selection is made, the job card is placed in a card pocket titled **"Jobs Ahead"** and directly under the workman's name, as shown in Fig. 3.

Selecting Next Job Ahead

The selection of the next job ahead is done by the foreman at any convenient time. The only suggestion is that the next-job-ahead hooks always have a job on them. In selecting next job ahead for a workman, review very carefully (Fig. 3) all the job cards in the card pocket. Selection should be made on a basis of (A) What time is the job promised in comparison with other jobs in pocket? (B) Is material and supplies on hand? (C) Does he need help on the job, if so is there an available man to be assigned? (D) Assign jobs in sequence that will prevent hold-overs of short jobs if it can be avoided.

A Job Always on Next-Job-Ahead Hooks

The foreman can eliminate all waste time between jobs by keeping a job always ahead of the workman. This permits the workman to get his next job from the schedulegraph, as shown in Fig. 4, without the foreman's aid. The workman appreciates this, for it keeps him posted as to what work is ahead.

Workman Turns in Full Time on Job Card

A job card with all expense charges shown gives to the office a reliable method by which proper invoice can be issued to customer. Workman on the completion of a job removes job card from schedulegraph and makes all time and material charges. If a job requires longer than a

day it is suggested that the workman enter his daily time on the job card each day until the job is completed. The job card representing the finished job is taken to office at convenience of foreman.

Workman Makes Proper Material Charges

The job card should receive all charges of material used by the workman. If a shop secures material from store room this will give the office an excellent check between charges made by mechanic. Mechanics can make charges of supplies on the back of job cards when they are received. This somewhat eliminates a possibility of error.

Every One Knows Starting Time of Job

The workman when he starts on a new job adjusts the hand on the schedule clock, showing the time the job was started, as shown in Fig. 5. This is required for two reasons: (1) The workman at the time he made out his time entries on the job card can see what time he started on the job. (2) The foreman knows at a glance when each job the men are working on was started. Because of this he is enabled to judge at about what time the job will be finished, making possible further delivery promises with some degree of certainty. A close view of the schedule clock is shown in Fig. 6. The use of this clock dial permits more accurate changes for time spent on jobs.

Every customer will appreciate methods that will insure a more accurate time charge. Some shops are equipped with the registering time clock. This of course is ideal. The job card when used with a clock is provided with a space for registering the starting and stopping time of a job. Its relation to the schedulegraph is unchanged whether the time is stamped on the job card or written in by the workman.

Workman Increases Output

Workmen like the scheduling feature of the schedulegraph. It helps them to make good on their different jobs during the day. Every workman should familiarize himself with the uses of the schedulegraph, as it helps to make the day's work easier and more pleasant. They know what jobs are ahead, also what the next job is to be.

Delivery Promises Made

Foreman can make delivery promises based on actual information, eliminating the usual "guessing contest" of when a job can be turned out. To make a promise on a job always review the jobs scheduled on the schedulegraph. Note carefully at what time a workman will be finished that can do the job. If you can estimate the time required to do the job being promised, this time can be added to the time the workman will possibly start on the job and you have the possible delivery time.

With this method of presenting graphically the activities of a repair shop the foreman can control the shop with much more precision. Promises can be made with some certainty and confusion eliminated. The time and delivery record of each job is clearly shown. An eye is pointing directly to every job in the shop. No bad promises nor padded time cards are possible when adopting a scheduling plan, such as shown.

Simple, effective and reliable is this method of controlling jobs. Scheduling of work is a sure agent to increase a keener appreciation of shop control. No guess work; but promises that are really based on facts can be made by the shop. Customer's desires are met with promptness, which is certain to be a guarantee of future business relation.

Time Report and Pay Roll

Correct management is that greater financial benefit can be received with less efforts expended. In the past we have assumed that a business can just go along from day to weeks and months without any means of knowing absolutely just what the business is doing. However, at the end of the year a review of the business is made. But if losses are occurring it is too late to counteract them. The yearly inventory and summary should be supplanted by more modern methods in which a constant check is kept, not only on material, but on methods of doing business. The standard today is effective control of employes, supervision of shop, costs of time and stores and such other essentials, as make it possible to get all the profits which should be made from the volume of business done. A record, as indicated in Fig. 1, will give daily the amount of chargeable labor and non-chargeable labor performed. The losses and gains are shown in your repair shop. To get information of this character placed on your desk each morning is certainly a lever that can be used to promote more effective shop control. A record of money making facts are before you. If you are giving an employe a weekly wage, a record of this kind will show you just how much you get in return. With this information it should be possible to cut your shop losses to a minimum.

GOOD Shop Equipment SAVES Owners MONEY

By A. V. COMINGS

IF we know of a piece of shop equipment that, installed in our service shop would save our owners labor costs in servicing their trucks, and do not get that piece of equipment, we are not giving our owner a square deal. For by so much are we contributing to high service costs. Because we feel this way about it we have added to our equipment here in Chicago everything we know of that saves money for Garford users, and judging from the things they tell us and write us, they are pretty well satisfied."

So says Grant C. Nicol, manager of the Chicago branch of the Garford Motor Truck Co. An inspection of the methods and equipment of the Chicago service station reveals that Mr. Nicol puts his theories on proper equipment into everyday practice, with very satisfactory results to Garford users in the Chicago district.

For instance, about the first thing I noticed was a couple of workmen applying a hydraulic hoist to a Garford chassis. Now, this sort of job, in the average truck service station, means using the tools usually at hand, which are generally insufficient for this kind of work, and result in running up a big labor bill on the truck owner.

Not so in this station. Holes may be drilled through steel with a ratchet wrench and an "old man," but it is a long, expensive process, and while some truck shops use it, this service station uses a

They Use a Big Air Hammer to Drive Home the Rivets on a Hoist Job

Little Giant No. 0 air drill, a machine that eats a hole through steel surprisingly fast. For the lighter work an electric drill was used.

Plates and rods used for installing this hoist were cut speedily on the power saw in the machine shop, and when it came to driving the rivets on the job the boys trotted out a big Boyer air hammer (a tool I have never before seen in a service shop), and the rivets that hold that hoist in place were jammed home to stay.

There were plenty of "C" clamps of all sizes to hold the work temporarily in position, and when there was a hole to be drilled the twist drill of exactly the right size could be secured in the tool room, for all sizes are kept. If a hole needed reaming, the tool room furnished the right size reamer, for it has a wide assortment of both taper, straight and expansion reamers to meet every requirement.

Special forgings are always available from the completely equipped forge shop in one corner of the service floor, and the complete acetylene welding plant used on all welding jobs is ready at hand for instant use. This outfit is also used when it is necessary to do an odd job of cutting, for it eats through steel as though it were so much lead.

Bolt Clipper Instead of Laborious Methods

Other operations in installing that hoist were speeded up with proper equipment, and a couple of bolts that were too long and stuck out from the job, on final inspection, were clipped off quickly with a big bolt cutter. Sure, these could have been cut off with a hammer and cold chisel, or a hack saw—the usual way—but it is quicker to use a bolt cutter, so the Garford service station has a bolt cutter there to use. **It saves the truck owner money.**

And that's the answer when it comes to good shop equipment.

Did you ever see a workman trying to get a piston back into the cylinder block of a big truck motor, without the proper tools to accomplish the job? He struggles and pulls, and pinches and shoves, and just when he thinks he has the piston on its way—bam! the job gets away from him and he has to start all over again. While the truck owner's labor cost keeps running up.

The Oxy-Acetylene Gas Welding and Cutting Outfit is Used for a Variety of Purposes

Two Men Lift an Engine Out of a Truck and Put It on a Stand Ready for Work in Five Minutes

Well, at this Garford station they have a set of piston ring seaters for every size motor on a Garford truck, and they're not a very expensive piece of equipment, either. And yet where the poorly equipped shop would waste many, many minutes (at so much a minute, paid for by the owner), this service shop shoots the pistons into place with this device as easily as pouring water through a funnel.

Sixteen Hours Against 15 Minutes

I watched them pull a wheel from a worm-drive axle. This may be a very hard, long-drawn out affair, as it sometimes is in many shops, or it may be a quick and seemingly easy affair as it is in this service shop. For John Brolley, the service manager in the Garford shop, has used his wits and invented a wheel puller that makes things move when it gets busy. It's just a truck wheel hub cap with a screw in the center, but when this is bolted to the wheel hub and power is applied to the screw, something has to move.

A while back the service men in another truck service shop in Chicago worked sixteen hours trying to get a wheel off its axle and didn't succeed. They had heard of Brolley's device, so they sent for it. And the wheel was on the floor within fifteen minutes.

Just a little piece of equipment to save the truck owner money, and that's why this successful service shop has it.

Jacks and Crane Are Time Savers

There was a time when all hands had to be called to move a big truck around a service station, especially if the quarters were at all cramped. Some one had to pay for that time, and of course that somebody was the truck owner.

Now the modern service station, like this one, has several quick-acting jacks operating on broad faced wheels of small diameter, and with these jacks one end of the heaviest truck may be lifted and "slewed" around wherever the workman wants it. And by ONE man. This station is using the "Yellow Jack-it" jacks of this type, and they cut down the cost of moving the trucks around by a very considerable sum on all jobs. Barrett ratchet jacks are used where the trucks are to remain stationary, and these quick acting jacks cut the minutes away, too.

Another job that all hands used to be called in for was taking a motor from a chassis and getting it landed on an engine stand in the motor repair room. One man can do this now, for the crane used at this station yanks the motor out and then carries it to any place in the shop.

Mr. Nicol believes that the workman whose work is well lighted will do better and quicker work, and so men on the job always have at their command just as many extension lights as they need. And the unusual thing about all these extension lights is that the extension cord is **encased in flexible metal conduits,** so that the cord is not constantly wearing out and having to be replaced. For over 2½ years these lights have been in service, and while the first cost was a little greater, the use of the metal conduits has saved the company considerable since their introduction. Just a little off of each Garford user's overhead. And it all counts.

The principal machine shop equipment is a lathe, one large drill press and one sensitive bench drill, a power hack saw, emery wheels, etc. There is little that comes up in the course of service work that cannot be handled either in this shop or with the other service shop equipment.

Another thing. In most service shops one man looks after the tool room, while another cares for the stock room. This station is so arranged that one man may issue both stock and tools, and here again is the saving for the customer.

Piston Ring Seaters Make Insertion of Pistons a Quick Job

Modern Equipment for Service Stations

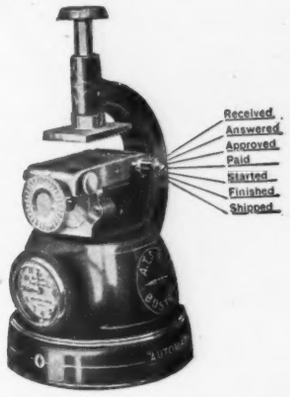
In the following pages will be found equipment suitable to service stations of all sizes. The shop equipment shown in this review has not been previously described in this publication. In order to make the list as complete and as representative as possible, it has been found necessary to include equipment not applicable to the needs of every service station. It should also be understood that limited space prevented detailing every item of equipment on the market. The review is primarily for the purpose of acquainting the trade with a comprehensive list of essential shop equipment; not as recommendations for particular makes

Triplex No. 1 Machine Tool

The Triplex No. 1 Machine Tool, manufactured by the Triplex Machine Tool Corp., 18 E. 41st St., New York City, is a combination machine that may be used in turning, milling and drilling operations. This feature of universality is claimed to save time in making job set-ups, and in many cases eliminates the necessity of changing the positions of the work when performng a variety of operations. It is constructed to withstand heavy-duty service, and is adapted for shops having a limited floor space. The spindle bearings of this machine are tapered and adjustable for wear. Bearings are phosphor bronze and all gears, spindle and tailstock are of alloy steel. Specifications: Working table, 5 x 14½ in.; longitudinal feed, 10 in.; transverse speed, 6 in.; vertical feed, 4¾ in.; swing over working table, 9 in.; swing over ways of bed, 16 in.; weight, 450 lb. Standard equipment comprises the machine, ¼ h.p., reversible direct or alternating current motor, slotted door driving plate, centers, tool post and wrench. The price is $485.

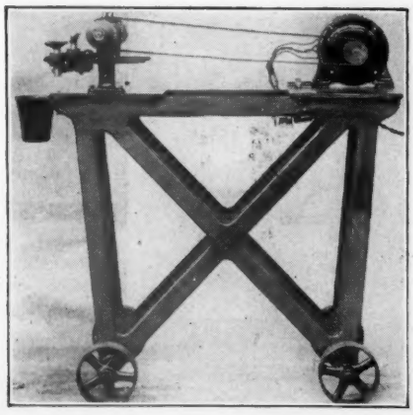
Allen Electric Arc Welder

The Allen Mfg. & Welding Corp., 163 Adams St., Buffalo, N. Y., is marketing an electric arc welder for repairing cracked water-jackets without the need of dismantling cylinder blocks as preheating is said to have been eliminated. Further, no distortion is said to result if the process afforded by this outfit is employed. Long life and elimination of repairs are claimed to be features, because of the absence of moving parts in its construction. Broken housing axles and frames can be repaired with equal facility without preliminary preparation.



Automatic Time Stand

The accompanying illustration is that of a stamp generally used by garages and service stations for recording the time of starting and completing repair work on trucks. In fact, it is useful wherever a time record is required. It is manufactured by the Automatic Time Stamp Co., 160 Congress St., Boston, Mass. The hour and minute and A. M. and P. M. printing hands or time indicators are connected directly with the clock which revolves them inside a stationary printing clock dial die. The dial is of hard engraved brass. This stamp is guaranteed for one year and sells at $55.

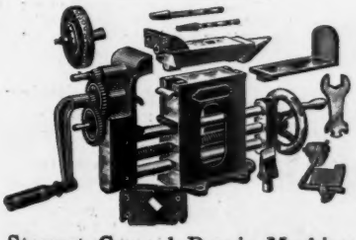


Western Polishing Machine

The St. Louis Machine Tool Co., 932 Loughborough Ave., St. Louis, Mo., is offering its No. 10 polishing and tire repair machine as especially adapted to service station work. It is substantially constructed, and has long self-oiling bearings. The arbors are of .40 carbon steel. Threads are square and of extra-course pitch. This machine is furnished with plain pulleys for use with countershaft or with tight or loose pulleys. This machine can be furnished with taper point either right or left, if desired. Specifications: Diameter of arbor in collars, 1¼ in.; in bearings, 1½ in.; and weight complete, 425 lb. The all-metal frame is mounted on four 7 in. wheels, which are large enough to roll easily and small enough to make the machine quite stationary when in use. The utility value of portability suggests innumerable possibilities for this outfit.

Multi-Purpose Arbor Press

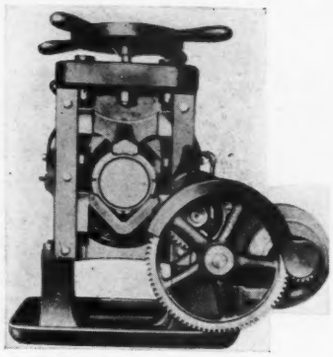
This multi-purpose arbor press, put out by the Naperville Machine Co., Inc., Naperville, Ill., has welded cross ties, an adjustable table, and steel gears. It is featured by its safety devices. A bell warns the operator when the ram nears the limit of its movement, and a safety cap is furnished to protect the operator from injury, should anything being used as a ram bend from the strain. V-blocks are furnished for placing the material to be worked. This press is made in 30 and 50 ton sizes and sells at $85 and $110, respectively.



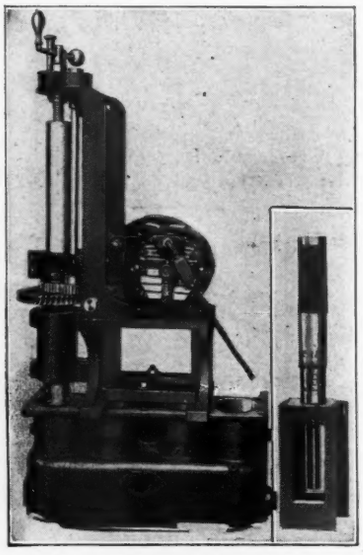
Stewart General Repair Machine

Equipment that facilitates repair work, such as cleaning, polishing, scratch brushing, drilling and grinding in ordinarily inaccessible places about a truck is being called to the attention of repairmen by the Chicago Flexible Shaft Co., Roosevelt Rd. and Central Ave., Chicago, Ill. This equipment, mounted on a four-wheel, 20 x 30 in. platform truck, a valuable feature of portability, makes this work easy. Motive power may be secured from any electric socket. This machine is equipped with a four-section, gear-driven, universal-jointed shaft. It operates at any angle up to 136 deg. when bent at its various swiveled joints. Driving power is transmitted by steel spindles running inside the tubes and steel cogs in each joint. A ½ h.p. motor belted to a 4 in. drive pulley on the top of the standard and operating at a speed up to 2400 r.p.m. provides the driving power. The price complete with truck and equipment as illustrated is $120.

Self - Centering Threading Machine

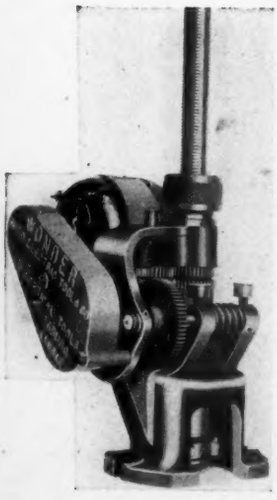


As may be seen, this machine, made by the Curtis & Curtis Co., Bridgeport, Conn., has a self-centering vise for retaining the pipe during the threading operation. Pipe is placed into the machine from the rear and is clamped securely into place by a hand wheel located on top. After the pipe is threaded it is removed by drawing back the dies by a slight turn of the cam ring. Thus permitting the pipe to be removed without running back over the thread.



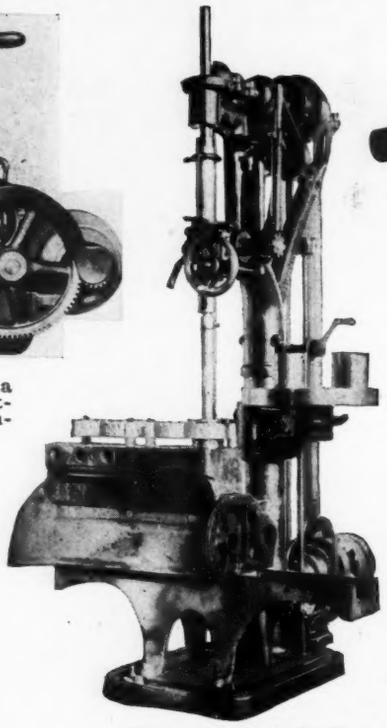
Wepplo Portable Reboring Mill

A machine which does not necessitate the removal of a cylinder block from the chassis when reboring the cylinders of a detachable-head engine is the product being offered by the Wepplo Machine and Tool Co., 5340 Montrose Ave., Chicago, Ill. The large illustration shows this machine mounted and set preparatory to operation. The smaller view to the right is that of a micrometer for making accurate measurements of depth cuts. The reboring bar is almost 2 in. diam. and has adjustable bands. The ¼ h.p. motor operates the machine at 25 r.p.m. for boring and 100 r.p.m. for polishing. The two cutters mounted in the boring bar operate simultaneously, the lower which is a heavy-duty cutter making the rough cut and the upper, the finishing cut.



Wonder Reboring Machine

This machine, which can be operated on practically all engine blocks without removing them from the chassis, is a product of the Auto Electric Tool Co., Pittsburg, Kansas. Motive power is provided by a ¼ h.p. General Electric motor, which will operate on ordinary electric current. This machine also has two-sized cutting cylinder diameters, giving a total range of .001 to .031 in. It is offered with heads of two capacities, designated as Type A and Type B. The Type A head bores from 2 to 3⅛ in., and has two sets of knives and guide rings. The price complete is $215. Type B head bores from 3 to 4 in., and is also provided with 2 sets of knives and guide rings. The price complete is also $215. This wonder reboring machine including both Type A and B heads bores from 2 to 4⅛ in. and lists at $250 complete. All prices f.o.b. factory.

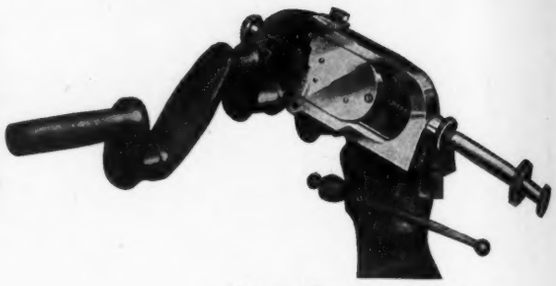


Power Feed Drill Press

This is an illustration of the 22-in. power feed machine selling at $225, f.o.b. Philadelphia, being offered to the service stations and repair shops by the manufacturer, the Champion Mfg. Co., 2908 W. Fletcher St., Philadelphia, Pa. Briefly, the features of this machine are: Machine cut gears; 8 speeds; power, hand and lever feeds. It drills to 1½ in. An additional feature is its quick return mechanism.

Weber Connecting Rod Machine

The Weber connecting rod machine, put out by the Shawyer-Weber Tool Mfg. Co., 250 S. Alameda St., Los Angeles, Calif. is described as a precision machine particularly qualified for testing and straightening connecting rods with or without pistons and the pouring and boring of connecting bearings. This machine may also be employed for pouring and boring half main bearings. Extra equipment includes babbitting plugs, piston indicator or surface gage, and cutters.



Sutter Crankshaft Tool

A tool for rounding crank pin and crank shaft surfaces in sizes from 1¼ to 3 in., is one of the products being offered by the Fred Shaw Mfg. Co., 22nd and Montgomery Sts., St. Louis, Mo. The illustration shows the manner in which this device is applied to perform this service. Three different width blades are provided with this tool. The price is $75.

Combination Press and Riveting Machine

The Naperville Machine Co., Inc., Naperville, Ill., has on the market a combination arbor press and riveting machine known as the Perfection. It is simply and compactly constructed, consisting of but few parts. The casting is large and capable of withstanding the excessive pressure exerted on it through the lever when employed as a press. The illustration shows this machine in position for cutting off old rivets in a brake band. This machine is also employed for riveting new bands into place. It is supplied with cutting and riveting attachments and is sufficiently large to press bushings in and out of spindles. The price is $22.

Agnew Spot Welder

This machine which is stated to be capable of taking care of any welding operation that may be required of it in the general run of service station work is being offered by the Agnew Electric Welder Co., Milford, Mich. It is a modern general purpose welder, provided with facilities for attaching jigs, templates and special shaped horns. Its equipment includes a regulating switch and an adjustable foot lever which automatically applies and breaks current under pressure. As may readily be observed from the illustration the general construction and arrangement of operating levers are such as to facilitate work and free the hands. Working points are at a height convenient to the average man. The work points and horns are water-cooled. All working parts are readily accessible and simple of construction. Welding capacity, two pieces ten-gage steel and lighter; weight, 900 lb. If desired a butt welder attachment can be supplied together with the machine.

Portable Shop Table

This shop table, offered by the Auto Table Co., 121st St. and Jamaica Ave., Richmond Hill, N. Y., is provided with 12 trays for stocking small parts. It is additionally provided with a small drawer and lock for the safe keeping of tools, etc., and a vise with anvil shoulder. This table is 30 in. high, 46 in. long, 16 in. wide, 85 lb. in weight.

Sioux Flexible Shaft Attachment

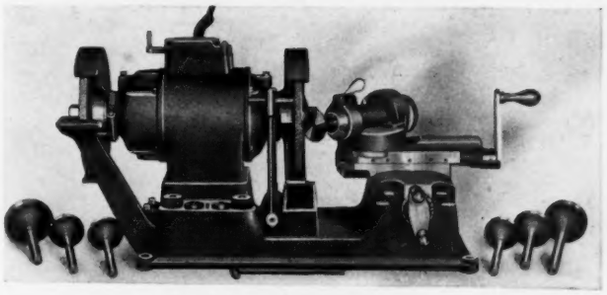
This flexible shaft attachment, made by the Albertson & Co., Inc., Sioux City, Iowa, is an auxiliary sold only with the mechanical valve grinder also produced by this company. This attachment provides a convenient method of cleaning, polishing, grinding, reaming and drilling. Although provided with a small motor it can be driven by other means. Additional equipment includes chucks, arbors, emery wheels, etc. The list price, with valve grinder, is $90.

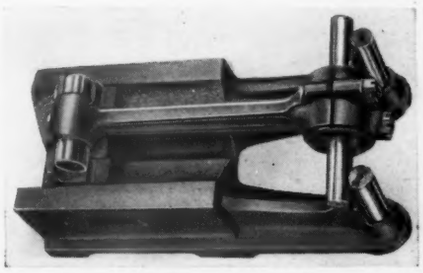
Butler Kwik-Lift Combined Garage and Wrecking Crane

The removing and replacing of engines and rear axles from and into chassis are operations frequently occurring in the daily work of service stations. To facilitate work of this nature the Butler Kwik-Lift Co., 849 Flatbush Ave., Brooklyn, N. Y., recently put out the outfit illustrated herewith. This heavy-duty crane may also be mounted permanently in a service car as a wrecking crane by merely dismounting it from its roller base. This shop crane has a six-foot lift and is equipped with a double-reduction hoisting apparatus. Briefly, it is solidly constructed of malleable iron and steel castings. Roller bearing wheels give it its necessary portability. The equipment furnished with this crane includes 35 ft. of crucible steel cable, giving a lift of 10 ft. The price for the wrecking crane only is $75, and for the combination garage and wrecking crane, $110, f.o.b. Brooklyn, N. Y.

Collins Facer and Grinder

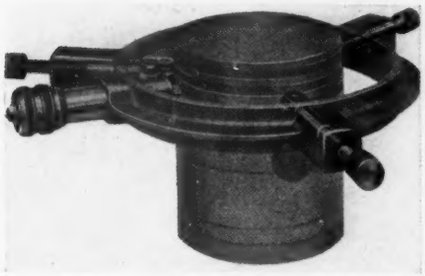
The Ford C. Close Co., 2 Rector St., New York City, is offering tool illustrated herewith for grinding valve faces and tool grinding. It has a ¼ h.p. motor and 6 in. Wheel. One of the two grinding wheels faces the valves and grinds the reamer for cutting valve seats and the other is used for miscellaneous tool grinding. Hoods and tool rests are part of the grinding wheel equipment.





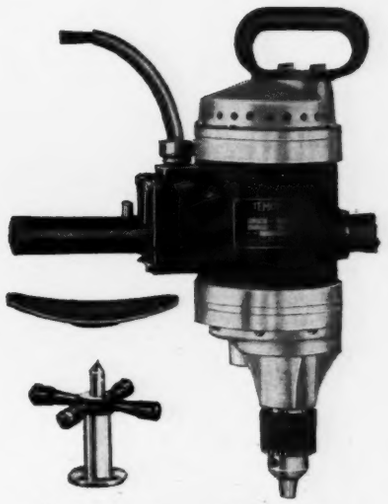
Connecting Rod Aligning and Straighting Fixture

A quick-acting aligning bar is the most important feature of the fixture as it permits ready testing of the parallelism of holes and the twist in connecting rods used in various makes of engines. It is manufactured by the Allen Wrench and Tool Co., Providence, R. I. In making tests for determining both the twist and parallelism existing in a connecting rod both these faults are disclosed in one setting as shown in the illustration. These tests are made with the wrist pin in position. The base is of cast iron as well as the cross slide-member, which, also, is actively scraped in position. All steel parts are hardened and accurately ground. The price is $55 f.o.b. Providence, R. I.



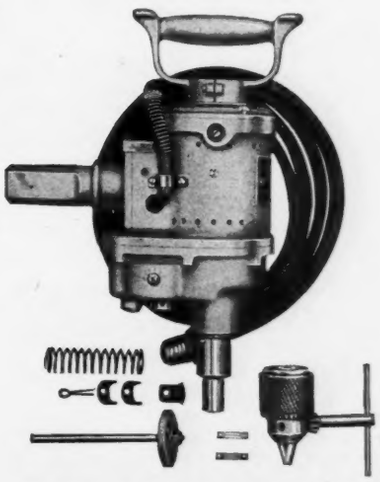
Rebco Regroover

A practicable tool for cleaning, deepening and widening piston grooves without the necessity of removing them from the connecting rod is being offered by the Reus Mfg. Co., Baltimore, Md. Correct size cutters and guides to accommodate all popular sized pistons are provided with this outfit. A cutter adjuster having a micrometer attachment permits accurate groove work to within one-thousandth of an inch.



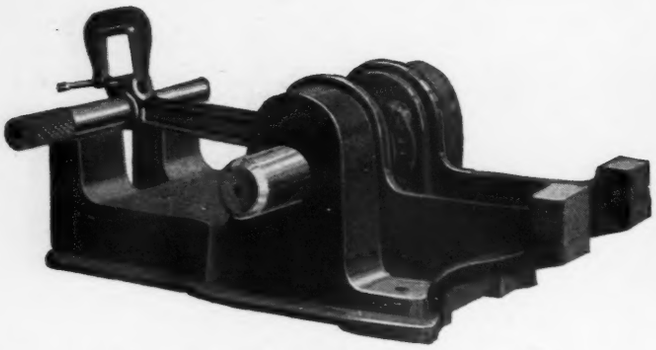
Temco Heavy-Duty Drill

This is a tool that is declared by the maker, Temco Electric Motor Co., Leipsic, O., to sustain the severe service of repair shops or service stations. It has a universal motor with ball bearings, cut steel gears, offset spindle, and a detachable handle enhancing its utility in close quarters. Its capacity is ½ in. and its equipment includes Jacobs chuck, grip handle, breast plate, wire, etc.



HusKee Drill and Valve Grinder

This combination grinder, drill and valve grinder, offered by the Rivett Lathe and Grinder Co., Brighton, Boston, Mass., for the Worcester Electric Tool Corp., Worcester, Mass., is known as the HusKee three-in-one tool and can be employed in portable or stationary work. The handle of this tool is flatened on two sides so that it can be mounted in a vise. Its capacity is ⅜ in., in tool steel. One of its mechanical features is a sleeve which furnishes the necessary oscillating motion required when valves are being ground in. The motor is protected by a fuse. Price, $100.



Dearborn Connecting Rod Aligning Device

The Dearborn Type A-1 Burning-in Machine, marketed by the Dearborn Equipment Co., Kalamazoo, Mich., was designed especially for repair shop service. It has a four-to-one drive ratio, giving a running speed of 720 r.p.m. and a burning-in speed of 180 r.p.m. The base construction is such that it permits lowering into the oil sump, which is claimed to do away with oil splashing when running in or limbering up the engine. Use of a Diamond link roller chain, double strand drive, together with a multiple disk clutch, is claimed to provide flexibility and permit the engine to operate without noise or vibration.

Albany Tool Room Drill

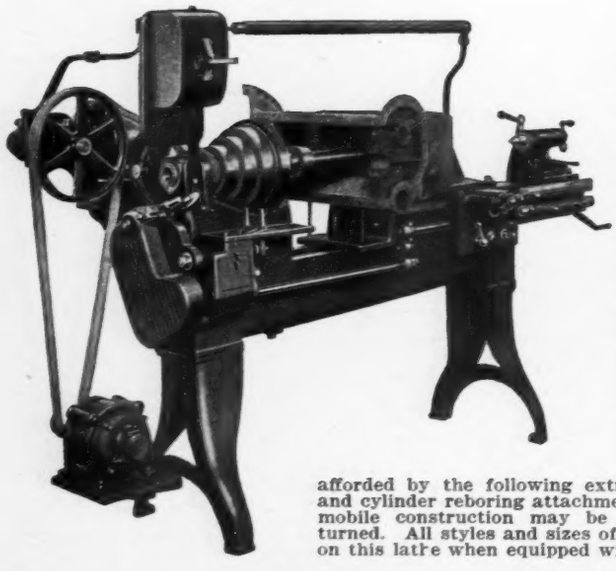
This illustrates a piece of equipment that should be regular equipment in every first-class repair shop. It is a 12 in. high-speed tool room drill offered by the Albany Hardware Specialty Mfg. Co., Albany, Wis. Aside from the unique features of construction and operation claimed for it, such as, rapidity of starting the spindle, changing drills and chucks, and changing speed, this tool drills accurately to any pre-determined depth. It drills from zero to ½ in. holes and to the center of a 12 in. circle. It is 72 in. high and weighs 315 lb. Some of the features are: Speed-changing device, and index of drill speeds; drill spindle, ground on a taper to fit chuck; positive depth stop for duplicate depth drilling; micrometer depth gage graduated in English measure; special drill table; and improved drill drift or ejector.

Geier Production Straightening Test

An item of service station equipment is being marketed by the P. A. Geier Co., Cleveland, O., for straightening crankshafts without removing from centers after being once mounted. In straightening a crankshaft, it is mounted on a center shaft which is fitted to a sliding head with roller bearings permitting free movement to the right or left. The slide head unit is pivoted to the press body, and held in a horizontal position by a vertical shaft having a compression spring on each side. A spring in the rear leg connected by a cable and equipped with an adjustable stop screw, controls the raising or lowering of the slide unit. Graduations in twenty-five equal spaces on the hand wheel enables the determining of up and down movement. By turning the hand wheel 1/25th of a revolution the pressure screw is moved up or down one ten-thousandths of an inch. By reason of a dial indicator, which has a ¼ in. stroke, work between centers if out of true, can be read on the dial in thousandths. Specifications: Maximum height, floor to the hand wheel, 55½ in.; minimum, 49½ in.; length of bed, 26 in.; maximum distance between centers, 40 in.; hand wheel, 11 in. diam. graduated to read in .010 in.; net weight, 500 lb.

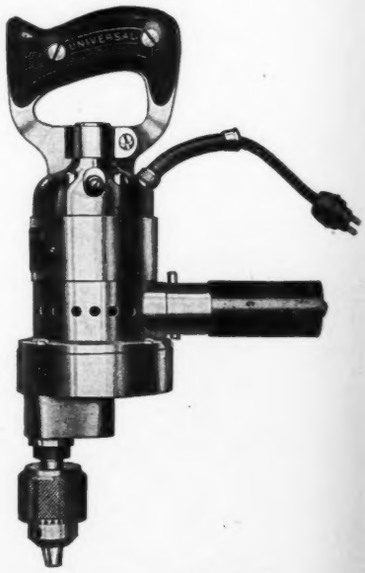
Universal Test Vise

A vise so constructed to hold any make electrical starter or generator for test purposes, is being offered by Becker Bros., Inc., 23-25 N. Jefferson St., Chicago, Ill. The makers claim that it eliminates the need of various devices for holding different types of starters and generators, thereby saving time. An angle block is furnished with this vise for the round type machines and a wedge-shaped block for the square and oblong types. All work is locked in place by taking up on the top screw. The bed plate angle and wedge block are corrugated and interlocked in each other, thus eliminating the possibility of shifting. Tightening or loosening of chain or belt is made by a few turns of the ball crank on the sliding base. The price is $36.00.



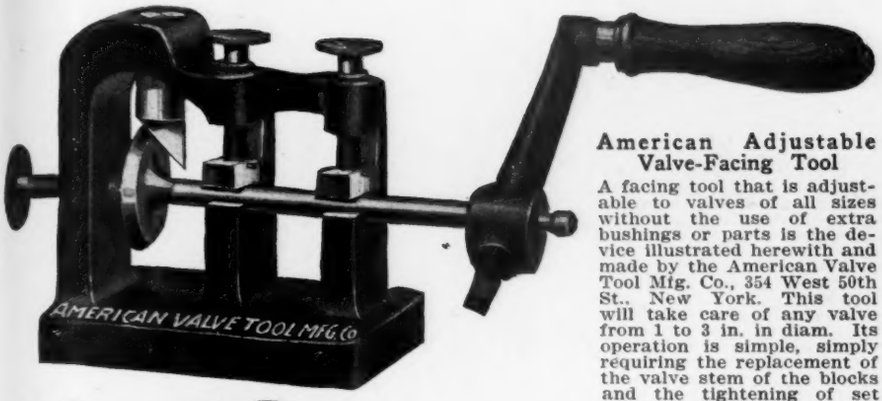
Barnes 14-24 Extension Gap Lathe

The Barnes Drill Co., 814-830 Chestnut St., Rockford, Ill., in pointing out the sliding extension gap feature of its lathe states that it combines the advantage of two lathes in one and requires a minimum of floor space. This lathe swings 14½ in. over the top bed and 24 in. diam. through the gap. In short, the opening or width of the gap may be varied to suit any particular job. The large hole through the spindle takes in all axle shafts up to 1½ in. diam. The top bed may be drawn back to take in the longest truck propeller shafts, crankshafts and rods up to 8 ft. The main top beds are fitted together by a dovetail construction. This alignment is maintained when the top bed is drawn back. A large scope of service is afforded by the following extra equipment: Taper, milling and cylinder reboring attachments. All tapers used in automobile construction may be conveniently and accurately turned. All styles and sizes of cylinders can also be rebored on this lathe when equipped with reboring attachment.



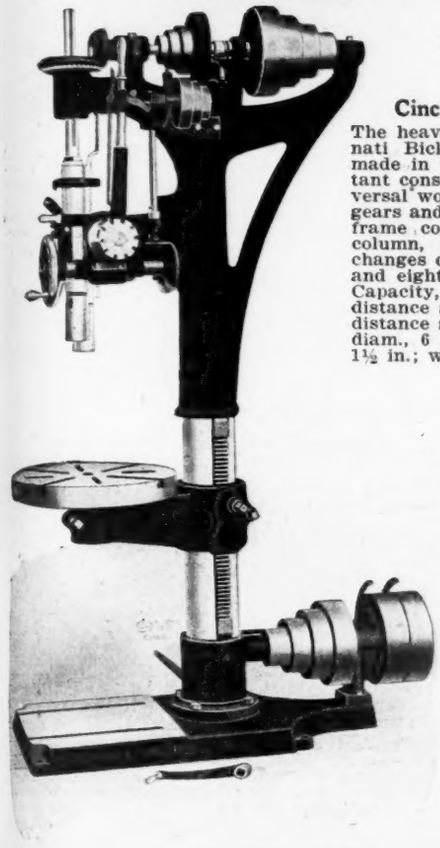
Portable Electric Drill

The Arnold Portable Electric Drill, manufactured by the Arnold Electric Tool Co., Inc., New London, Conn., is particularly recommended for repair shop and garage work. It is featured by its light weight. An offset spindle permits of close-quarter work. The handles are removable and switch within easy reach. Housing is aluminum throughout. Specifications: Length: 13 in.; Weight, 7 lb.; capacity in steel, ⅜ in.; capacity in other materials, ½ in.; and idle speed, 900 r.p.m. The motor is universal in that it can be operated on both A. C. and D. C., 110-120 volts, 25-60 cycles.



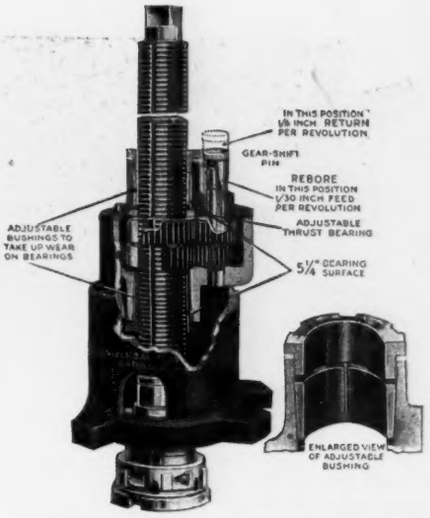
American Adjustable Valve-Facing Tool

A facing tool that is adjustable to valves of all sizes without the use of extra bushings or parts is the device illustrated herewith and made by the American Valve Tool Mfg. Co., 354 West 50th St., New York. This tool will take care of any valve from 1 to 3 in. in diam. Its operation is simple, simply requiring the replacement of the valve stem of the blocks and the tightening of set screws sufficiently to obtain proper bearing. The cutter is adjusted to allow for the diameter of the valve.



Cincinnati Stationary Head Upright Drill

The heavy pattern upright drill, made by the Cincinnati Bickford Tool Co., Oakley, Cincinnati, O., is made in thirty-two styles. Some of its most important construction features are right angle drive, universal work vise, square table, compound table, back gears and tap attachment, and head mechanism. The frame consists of a heavy ribbed base and ground column, made in one piece. The spindle has four changes of speed, when furnished without back gears, and eight when fitted with back gears. Dimensions: Capacity, drills in center of circle, 21½ in.; maximum distance spindle to base, 3 ft. 6¾ in.; and maximum distance spindle to round table 2 ft. 2 1/3 in.; column, diam., 6 in.; height with tapping arrangement, 7 ft. 1½ in.; weight, net plain with round table, 850 lb.

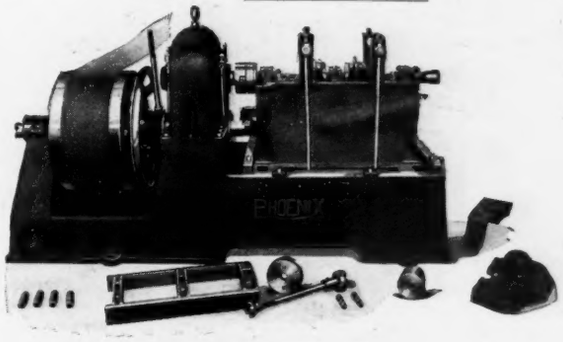

IN THIS POSITION 1/8 INCH RETURN PER REVOLUTION
GEAR-SHIFT PIN
REBORE IN THIS POSITION 1/30 INCH FEED PER REVOLUTION
ADJUSTABLE THRUST BEARING
ADJUSTABLE BUSHINGS TO TAKE UP WEAR ON BEARINGS
5¼" BEARING SURFACE
ENLARGED VIEW OF ADJUSTABLE BUSHING

Universal Cylinder Reboring Tool

The Universal Tool Co., Inc., Garwood, N. Y., is offering a new self-centering universal cylinder reboring tool, which is described as a portable precision instrument. This tool lends itself to manual and power operation with equal facility. The claim is made that the maximum variation of cylinders rebored by this tool will not be greater than .0005 in. The housing is of one-piece construction, which insures rigidity. Six cutting tools are mounted in equally spaced slots of the cutter head and chattering is avoided by use of special patented bevel rings.

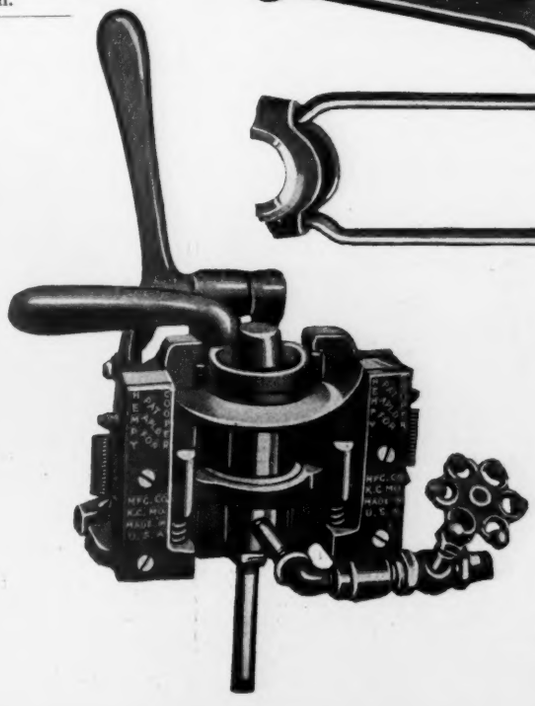
Phoenix Burning-in Machine

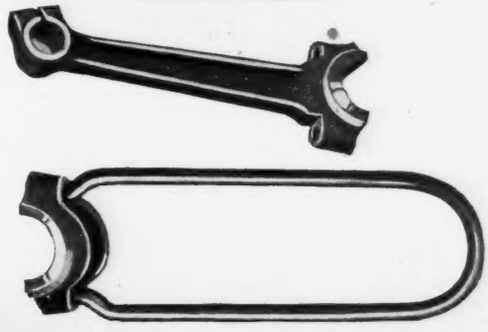
A machine that will burn-in and run-in bearings on all engines, trucks, tractors or passenger cars, is being offered by the Phoenix Mfg. Co., Eau Claire, Wis. The features of this machine may be summarized as follows: 3 to 1 gear reduction, screwstatic type Fibroid, cone clutch; universal coupling; universal joint for limbering motors; and silent operation. The machine is supplied with the different fixtures required for properly and effectively accommodating the make of motor specified. Specifications: Burning-in speed, 200 r.p.m.; running-in speed, 600 r.p.m.; weight without fixtures, 2100 lb., with fixtures, 2500 lb.; floor space, 78 x 29 in.; height, 38½ in.



Standard Radius Lathe and Planer Tool

Frequently, in automotive repair work, a radius of ¼ in., 1½ in., etc., must be turned, concave or convex. This tool, manufactured by the R. G. Smith Tool & Mfg. Co., 245-247 N. J. R. R. Ave., Newark, N. J., includes a standard set of cutters and is claimed to do such work quickly and accurately without cutting. The set contains standard radius cutters ranging from $\frac{1}{16}$ in. to 1 in. radius, concave and convex. Every service station having a lathe should include such a set in its list of repair equipment.





Hempy-Cooper Rebabbitting Jig

The new Hempy-Cooper jig for rebabbitting the main bearings and caps on Model T Fords and Fordson tractors, is especially recommended by the maker, the Hempy-Cooper Mfg. Co., Kansas City, Mo. This jig is of simple operation. Anyone can handle it. Parts cannot be clogged. It is equipped with two stream ladles. The outfit weighs 17 lb. complete, and sells for $37.50.

Dunham Piston Micrometer

An instrument that should be of value to manufacturers, jobbing houses, cylinder regrinding shops, in fact anywhere where piston ring stocks are handled, is the piston ring micrometer manufactured by D. F. Dunham, Oxnard, Cal. This gage will measure specifically and accurately any piston ring or piston from 2⅝ to 5$\frac{1}{16}$ in., telling the size to one thousandth part of an inch. In making the measurements the procedure is as follows: Place the ring in the opening at the right (refer to the illustration), encircle the steel tape, which is secured at one end of the instrument board to a pin and attached to a brass rack at the other end that in turn operates a pinion connected directly to the indicator, around the periphery of the ring. Then revolve the indicator knob. This tightens the steel tape on the ring until it is completely closed. The point indicated on the dial designates the size of the ring. Once around the dial measures 1 inch. The graduations on the dial are in thousandths and sixteenths of an inch.

Barrel Grease Pump and Truck

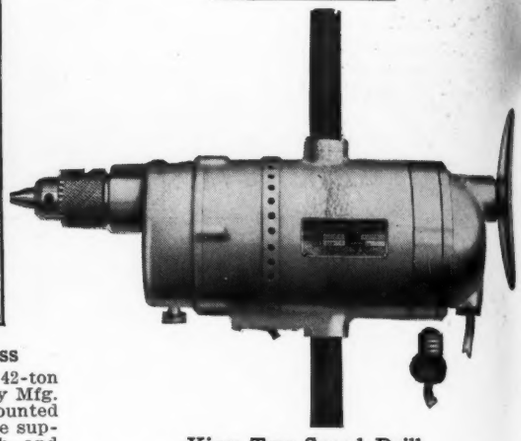
By reason of this strong, quick-acting barrel pump and truck, known as the Ideal, and manufactured by the Midway Mechanical Co., 1555 Selby Ave., St. Paul, Minn., and which shoots grease directly from the original barrel into the gears, it is no longer necessary to open a barrel, scoop and dip in order to gather the remaining particles of grease from a barrel almost empty. Capacity ½ lb. per stroke. The total weight is 40 lb., and the total price, $12.85.

Marvel Hack-Saw

Armstrong-Blum Mfg. Co., 333-357 N. San Francisco Ave., Chicago, Ill., recommends its No. 2 hack-saw as specially adaptable for service station work. It is strong and durable in construction. A feature of construction causes pressure on the saw blade on each draw stroke and relief on each return stroke. Another feature is the quick-action vise swivels, permitting material to be inserted for cutting on an angle either way. The saw bearings are adjustable and can be taken up upon wear. The saw takes blades from 12 to 17 in.

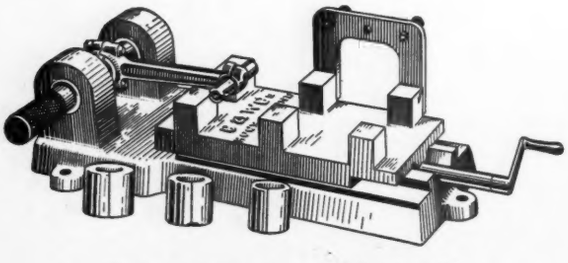
Manley 22-Ton Bench Press

This press is the top half of a 42-ton press, also put out by the Manley Mfg. Co., York, Pa., and may be mounted on a bench or some other suitable support. It has capacity in width and distance under the screw, to handle a large proportion of ordinary repair shop work. Every feature of the complete press is found in the Bench press as far as it applies. The screw, the hand wheel and the levers are all the same. Capacity and width, 19 in.; underscrew, 19 in.; weight, 225 lb.; price $58. The bottom part of the press may be purchased if desired.



King Two-Speed Drill

The features of this drill, manufactured by Jones, MacNeal & Camp, Inc., 522 S. Clinton St., Chicago, may be summarized as follows: 2-speed mechanism, helical gears and ball bearings throughout, General Electric motor, and 3-piece construction of the drill itself. The front portion contains the two sets of gears and the shift mechanism; the metal, the motor, wiring and tumble switch; and the rear, the protection cap. The construction is such that all parts can be tested and repaired without disturbing the motor or bearing.



Universal Connecting Aligning Jig

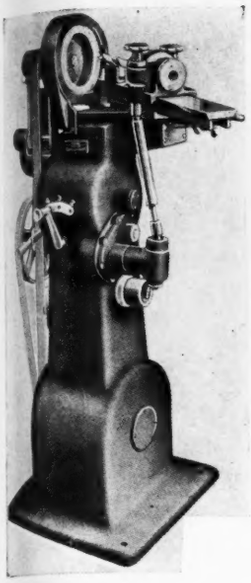
The John Dee Tool Co., Inc., Rock Island, Ill., is offering a connecting rod aligner for bringing into alignment connecting rods of engines of all makes. Both twist and bend can be removed simultaneously. Another feature is the "U" on the side of the jig, which enables the mechanic to determine whether the crossbar in the piston is correct or incorrect; and if incorrect, just how many thousandths it is out. This machine is made to accurate measurement, and is guaranteed to give perfect satisfaction. The price, including five bushings of any desired size, is $65 f.o.b factory. Extra bushings may be secured at $1.50 each. An attachment to be used in conjunction with this jig for properly centering and rebabbitting connecting rods of any size or make is also offered by this company. The price, including three sets of side plates of any size is $12.

Ashton Double-Needle Burner

The Ashton Mfg. Co., Newark, N. J., recently placed on the market this new, improved double-needle burner torch. This constructional feature is said to prevent the operator from screwing the needle up too tight and enlarging the small opening through which the gas passes. The upper needle cleans the orifice of the gas opening, and the lower needle regulates the flame. Either kerosene or gasoline may be used.

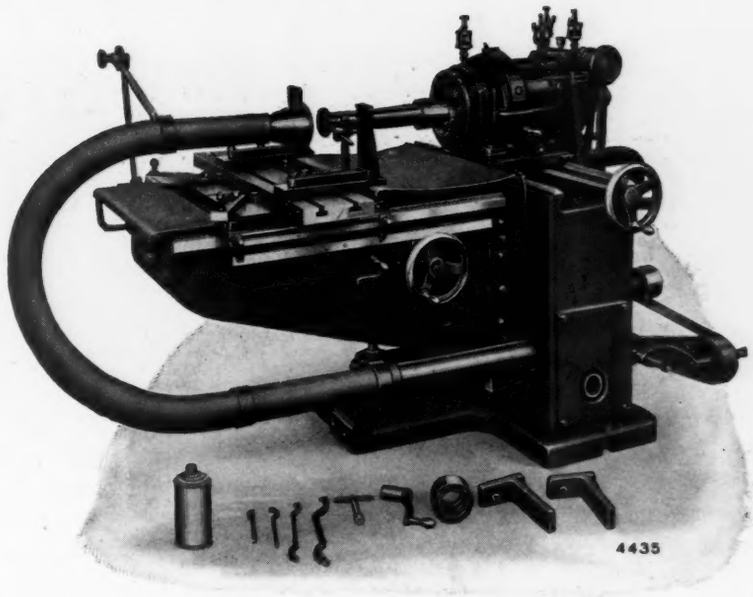
Ever-Hot Soldering Iron and Blow Torch

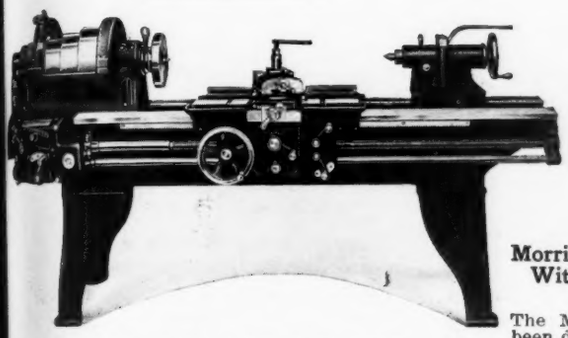
The American Solder and Flux Company, 2910 North 16th St., Philadelphia, Pa., is offering an item of equipment described as a modern soldering iron and blow torch. It is featured by even maintenance of any desired temperature, advantages of balance, and compact construction. A notable advance in construction is the heating element, which becomes a blow torch when the soldering tip is removed. The handle never becomes hot. Since the flame touches only the heel of the soldering tip, it is stated to be rarely necessary to re-tin or file back the soldering face. The price, including one tip, is $11.00. Six different tips are available at extra cost.



Oliver Drill Grinder

The Oliver Instrument Co., Adrian, Mich., is offering the machine illustrated herewith, as possessing special features for service station service. It has a unique design, and gives a point that penetrates rapidly. It is of simple adjustment and operates automatically. It will grind 2, 3 and 4-lipped drills, and requires no adjustment for drill size. In making a repair, the grinding wheel oscillates and the drill revolves.



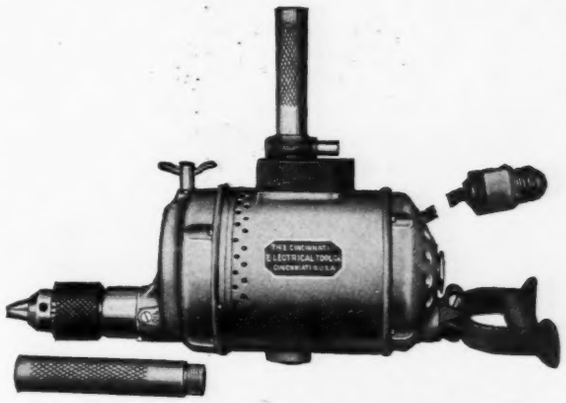


Madison Cylinder Grinder

The Gisholt Machine Co., 1245 E. Washington Ave., Madison, Wis., is making a machine designed for grinding and regrinding cylinders. A wide range of adjustments and the standard equipment furnished with the machine is stated to make it possible to handle various heights of cast enbloc cylinder castings. The headstock and grinding spindle are mounted on a transverse adjustable carriage and are driven by endless belts. The ways of the knee are sufficiently apart to permit the cylinder block to be between or directly over the ways at all times. Traversing movement of the table is automatically controlled by adjustable trips. This self-contained machine includes suction fan, belts, etc., and is driven by a countershaft or motor.

Morris Lathe Equipped With Quick-Change Feed

The Morris Lathes have been designed to meet the demand for an engine lathe that embodies all the necessary features of a modern manufacturing tool. The illustration herewith is that of the Morris 16-in. lathe with quick-change feed. It is manufactured by the Morris Machine Tool Co., Cincinnati, O. Regular equipment includes steady rest, large and small faced plates, wrenches and countershaft. Any other equipment of a special nature can also be furnished upon request. Specifications: Distance between centers, 2 ft. 8 in.; swings over shears, 16⅝ in.; swings over carriage, 10⅝ in.; spindle taper No. 5 Morse; spindle speeds range from 15 to 372 r.p.m.; centers size No. 4 Morse; weight, crated, 2200 lb.



Cincinnati Portable Electrical Hand Drill

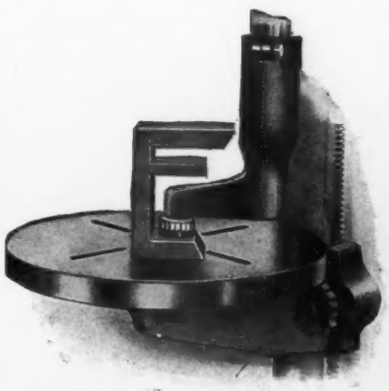
The ½-in. and ⅝-in. portable electrical hand or breast drill, put out by the Cincinnati Electrical Tool Co., Cincinnati, O., is said to be particularly adapted for all-around use in garage, machine and repair shops. It is fitted with chuck to take straight shank twist drills. A No. 1 Morse taper socket instead of a stock is furnished, if desired. Mandrel with small wheel can be inserted in the chuck for light grinding. The motor is Universal, operating on either DC or AC. The model illustrated is known as the UD, and provides two speeds. Motor diameter and length overall is 5¼ x 16¾, speed, 500-750 r.p.m.; weight, 21 lb.

C & S Engine Cleaner

A device that gives a powerful spray for removing dirt, oil or grease, and known as the C & S engine cleaner, is being marketed by Codman & Shurtleff, Inc., 535 Albany St., Boston, Mass. This tool is particularly valuable in the repair station as its powerful spray reaches into out-of-the-way corners more effectively and thoroughly than could a brush or cloth. It is made of heavy brass tubing, polished and lacquered. To operate, attach the tube from the compressed air tank or pump to the straight nipple on end of cleaner. Attach rubber tube to the curved nipple on the cleaner and place opposite end in the can of cleaning liquid.

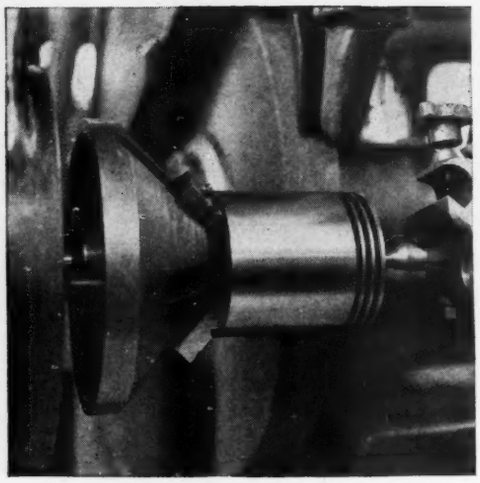
Brown Compressometer

This compression gage, manufactured by the Brown Co., Syracuse, N. Y., is a specially designed gage of the single swing independent type. A red indicator becomes animated when a test is made, and remains at the highest point of compression. With this instrument the amount of compression can readily be determined by screwing it into the cylinder in place of the spark plug and then turning the motor over by hand. Exact compression is registered by the red dial. The price, complete, optional thread, $6.



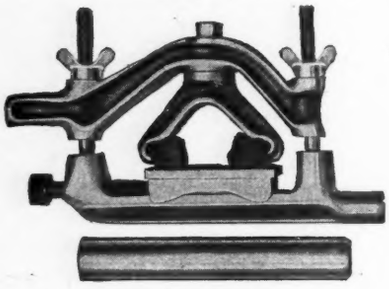
Harris Offset Drilling Attachment

The Harris Offset Drilling Attachment, made by the Harris Engineering Co., Bridgeport, Conn., is what its name implies, an attachment for drilling presses to drill, face and counterbore holes and bosses, in out of the way places, that cannot be reached by the usual methods. It is suitable for all standard drill presses, and is specially utilitarian in machine shops and repair shops in general. It is made in sizes to fit every standard make and size of drill press of similar machines.



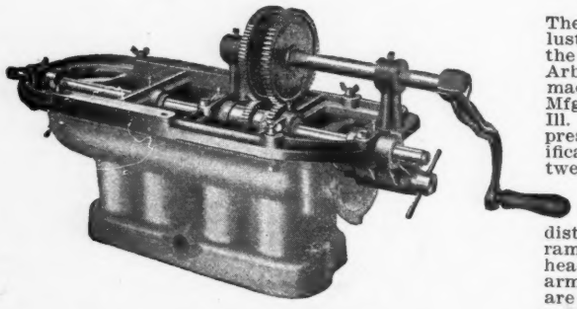
Norton Regrinding Machine

The Norton Auto Parts Regrinding Machine, built by the Norton Co., Worcester, Mass., is designed for all kinds of cylinder grinding. It will grind crankshafts, pistons, piston pins, valves, and any other cylindrical parts required to put a gasoline engine in first-class condition. The regular equipment of this machine includes an adjustable center grinding attachment. With this attachment the jaws of the piston grinding fixtures may be reground in a few minutes if they become worn.



Taber Refinisher

The purpose of the Taber Crankshaft Refinisher, made by the Consolidated Utilities Corp., Binghamton, N. Y., is to make it possible for the mechanic to true up flat, uneven or scored crankshaft bearings. Together with a vise, this refinisher may be used for refinishing crankshafts with micrometric accuracy in a comparatively short time. In fact, it is sometimes not even necessary to remove the crankshaft from the engine. It is constructed of steel, bronze and iron. The "L" block or guide is of special bronze. The cutter rests on a sliding carriage and is operated by a thumb screw to keep a new cutting surface constantly in contact. This refinisher is 9 in. long, 5½ in. high, and weighs 3¾ lb. It will accommodate shafts from 1 1/16 in. up to 2½ in. in diam., inclusive.

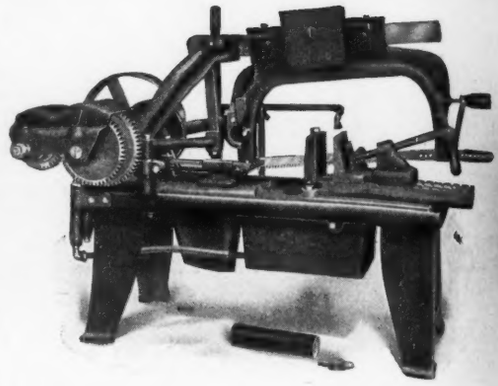


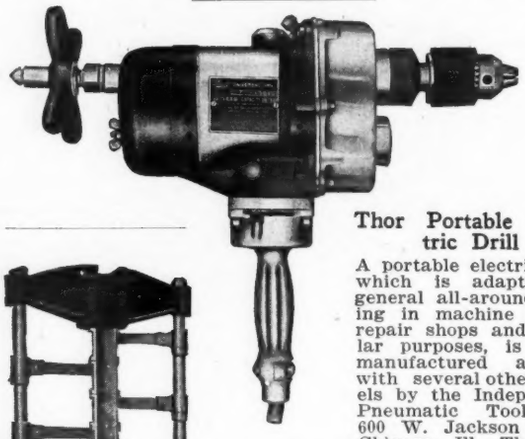
Hempy-Cooper Main-Bearing Boring Machine

Included in the line of service-station equipment, manufactured by the Hempy-Cooper Mfg. Co., Kansas City, Mo., is a machine for boring the main bearings in Ford cylinder blocks. All three bearings can be bored with one operation in straight alignment, and is claimed to insure perfect fit of the crankshaft. A gage for correctly setting cutting tools is furnished with each outfit. The price is $105.

Economy No. 40 Power Saw

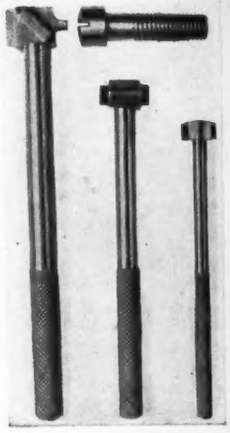
A machine which is suitable for cutting all kinds of materials such as comes under repair or replacement work in the shop and known as the No. 40 Power Saw, is one of a line of similar products manufactured by the W. Robertson Machine and Foundry Co., 56-58 Rano St., Buffalo, N. Y. It has a capacity of 8 x 8 in., and is equipped with a 2-speed gearing, allowing hard or soft material to be cut at the correct speed. A quick-acting vise permits opening from zero to full capacity instantly. This machine is also equipped with a special oil lift feature piston pump for distributing cooling liquid to the blade. Provision has also been made to prevent needless blade breakage through accidental dropping of frame. It is driven by an expanding friction clutch. It stops automatically at completion of cut. Blades are kept cooled by a special pump arrangement which distributes cooling liquid evenly and constantly over blade. The vise swivels to 45 degrees for cutting angles. The frame is provided with gibs for wear adjustment. All parts are provided with ample oiling facilities. This machine is furnished in single speed as well as two speeds. Specifications: Blades, 12 in. to 17 in.; stroke, 6 in.; pulley, 2½ in. x 12 in.; speed, 190 r.p.m.; weight, 450 lb. Another saw—a tire saw known as No. 600 is modeled after Model 40 except that the frame is designed to accommodate tires of 40 in. diam.





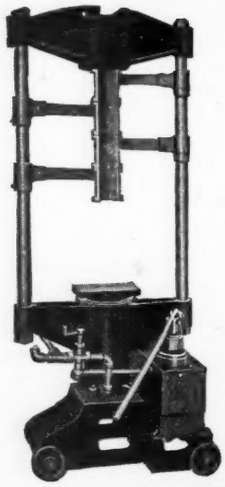
Thor Portable Electric Drill

A portable electric drill which is adapted to general all-around drilling in machine shops, repair shops and similar purposes, is being manufactured along with several other models by the Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago, Ill. The drill illustrated herewith is designated as Nos. O1, I, and 1S, and is designed for immediate drilling up to ⅝ in., reaming and wood-boring. Specifications of 1S: capacity, drill, ⅝ in.; ream, ⅞ in.; wood bar, 1⅛ in.; the motor is of the universal or DC type. This drill weighs 19½ lb. and sells at $105.



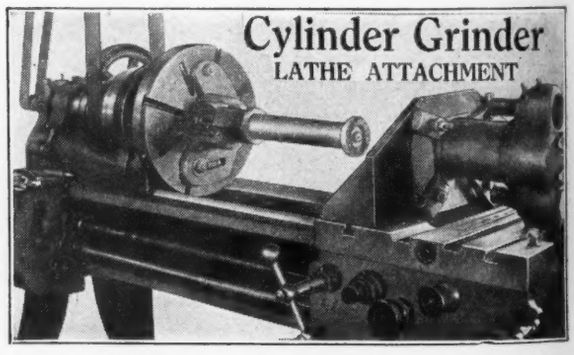
Utility Offset Screw-Driver

A tool designed primarily for working in cramped quarters, or for exercising powerful leverage on a stubborn screw, etc., is one of the latest products of the Porter Products Corp., Brewerton, N. Y. This tool is equally utilitarian in driving heavy wood screws. It is constructed of tough steel properly heat-treated, and its blades are accurately machined. The complete outfit includes the three units shown above.



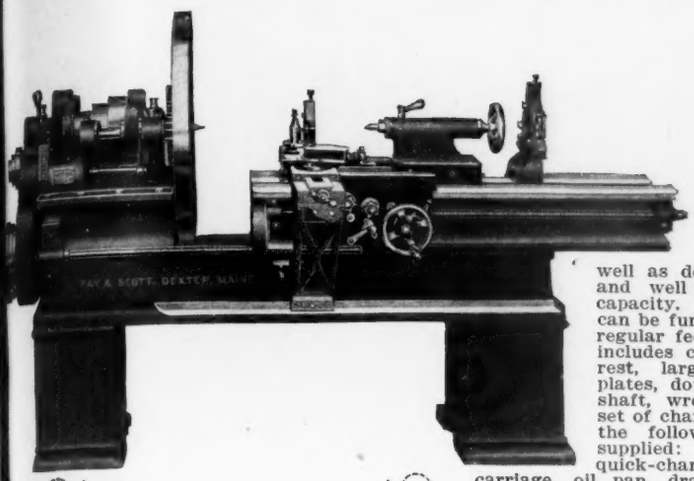
Lourie Hydraulic Arbor Press

The accompanying illustration is that of the Lourie Hydraulic Arbor Press, Type A, made by the Lourie Mfg. Co., Springfield, Ill. It is a 30 ton press on wheels. Specifications: 30 in. between strain bars; 42 in. between ram and cross head; 18 in. standard distance from top of ram to bottom of cross head. The swinging arms and the V-blocks are extra. This type of press is said to be specially desirable when a long, quick movement of ram is wanted under light pressure, and a heavy pressure is required for a part of the stroke. Eight strokes of the pump handle operating the 3 in. piston will raise the ram 6 in.



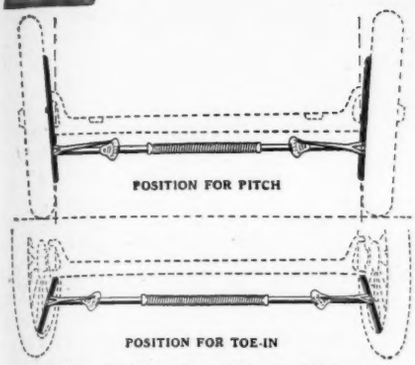
Salter Cylinder Grinder Lathe Attachment

An attachment that can be used on any make lathe of 16 in. swing and larger and which is fitted with a micrometer, is being offered by the Salter Motor Mfg. Co., 1516-1518 Oakland Ave., Kansas City, Mo. It is especially utilitarian for repair work in a machine shop or garage. This grinder may be fitted on any lathe and is stated to be rigid and accurate in its work. The grinding wheel runs on annular ball bearings, thoroughly guarded against dust, at a speed of 4500 r.p.m. It is mounted on an eccentric, thus grinding on the inside walls of the cylinder being grounded. Power is transmitted from the belt to the grinding wheel through a pair of universal joints. Offset adjustment from the line of the lathe spindle to give the eccentric movement is obtained from these joints. Adjustment may be had from nothing to 1 in. The price, including three grinding wheels, countershaft, belt-pulley and extra boring bar, is $200, f.o.b. Kansas City.



Extension Gap Engine Lathe

Fay & Scott, Dexter, Maine, is marketing an extension gap, engine lathe, 14-28 in. size, and of the three-step cone head, double-back gear type. This lathe is designed for handling work of large diameter and extra length, as well as doing work accurately and well within its ordinary capacity. Quick change gear can be furnished in place of the regular feed works. Equipment includes compound rest, center rest, large and small faceplates, double friction countershaft, wrenches, and complete set of change gears. If desired, the following extras can be supplied: Taper attachment, quick-change gear, elevating carriage, oil pan, draw-in chuck, friction head, and turrets fitted to carriage, or V's. Specifications: Swings over shear, 14¼ in.; swings over carriage, 8¼ in.; swings through gap, 28 in.; and between centers closed, 40 in.; extended, 60 in. This 6-ft. lathe weighs 2100 lb.



Bear Automatic Wheel Aligner

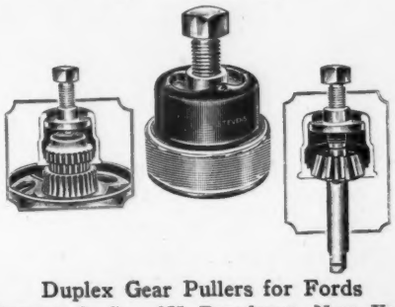
An instrument by which the front and rear wheels can be properly aligned, is being offered by the Bear Mfg. Co., Rock Island, Ill. This device is practically two instruments in one, as it enables the operator to get both the pitch and toe-in in a moment's time. The pitch and toe-in work automatically together. It is so made that it will telescope and compress, and is held in position just where it is put by a compression spring. It can be left in position between the wheels in most cases, while the adjustment is being made. The dials are simple and easily read. Each line on the dial represents ¼ in. on the wheel. The arrows and dials show when the alignment is correct. The most important features are stated to be automatic operation, instant registration, and elimination of adjustment and screwing. The price is $15.00.

Reed Inside Micrometer Caliper

The Inside Micrometer Caliper, manufactured by the Reed Small Tool Works, Worcester, Mass., for obtaining internal measurements of cylinders, rings, is equally useful in taking linear measurements, testing for parallel surfaces, comparing gages, etc. This tool is graduated to read to a thousandth of an inch. One of its features is the rapid interchangeability of the detachable handle, which makes right or left handed work convenient by bringing graduations on barrel within easy view. Because of the wider range of one inch the claim is made that less time is consumed in actual use. Extra rods, fitted with anvils allow for quick, accurate change. These rods are interchangeable, all having similar internal threads.

Luther Hummer Grinder

Included in the equipment offered by the Luther Grinder Mfg. Co., 285-289 S. Water St., Milwaukee, Wis., is a foot-power grinder known as model 271. Its features are summarized as follows: All metal frame, shaft drive, bevel gears, fully enclosed. The upper transmission is by ball bearings, a machine cut worm gear and shaft. The head containing grinding wheel shaft may be turned to any angle. It is operated by two foot pedals of the bicycle type, and has an adjustable metal seat for the operator. Regular equipment includes 2 Dimogrit wheels, size 6 x 1⅜ x 1 in., one medium and one coarse; universal tool rest and sickle, and disk attachment. Height of machine, 42 in. Weight packed, 85 lb.



Duplex Gear Pullers for Fords

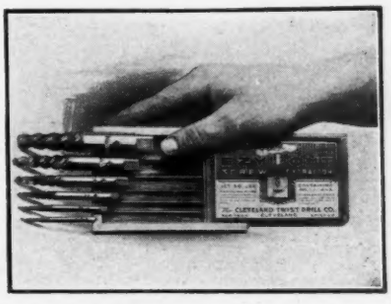
Stevens & Co., 375 Broadway, New York

Weaver Service Can

A can, known as the Safety Service Can and designed to furnish a convenient, quick, safe and economical means of handling fuel and lubricants is another of a number of products recently announced by Weaver Mfg. Co., Springfield, Ill. By reason of a flexible steel hose the opening of a fuel tank can be reached no matter how obstructed or inconveniently located. When the oil or gas is stored or transported, the nozzle on the hose is inserted in a vent on the cap, thus rendering the can practically air-tight.

Hansen Engine Cleaner

Among the automotive products offered by the Hansen Mfg. Co., 1786 E. 27th St., Cleveland, O., is a practical item of equipment for cleaning truck engines and other machinery parts of grease and dirt. It is an engine cleaner, and can be used with kerosene or other light liquids. It is featured by a positive control of air and liquid. The needle valve provides a graduated adjustment of the spray from heavy to light. The air gun can be quickly attached and detached from the engine cleaner, and used for general purposes. A stem for use in connecting the air line is furnished with each engine cleaner. They are made in ¼ in., ⅜ in. and ½ in. sizes. Six feet of metallic tubing is shipped with each outfit. Price, $6.00.



Easy-Out Screw Extractor

The Cleveland Twist Drill Co., Cleveland, O., is offering a special tool, claimed to alleviate the trying task of extracting broken screws through the use of files, punches and chisels. To extract a broken screw it is only necessary to drill a hole in the broken screw, insert this tool and then with the use of a tap wrench back the screw out on its own threads. No re-tapping is necessary. It is made in 12 sizes.

Walker Roll-a-Car Jack

A quick-acting, one-man operatable jack for raising a truck at any point is being offered by the Walker Manufacturing Co., Racine, Wis. It is known as the Walker Roll-a-Car Jack. Control is described as complete by reason of a latch located just below the handle giving three controls, raising, locking and lowering, and a foot pedal at the base of the handle for raising or lowering the rack bar. The jack raises by pumping the main handle, each stroke giving a ¾ in. rise. It is constructed

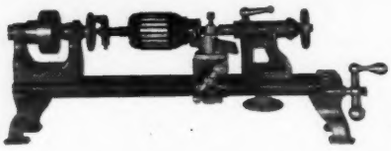
throughout of malleable iron, drop-forged steel and oil-tempered steel. Specifications: Weight, 117 lb.; lowest point, 8 in. and highest point, 18 in.; capacity, 5000 lb.; length, 50 in., and price, $50.

Quick-Set Adjustable Reamer

For garage, repair or machine shop the Cleveland Twist Co., Cleveland, O., recommends its Quick-Set Adjustable Reamer. It is of special rust-resisting finish and has a wide range of expansion. A feature of this reamer is the ready replacement of the six blades when in need of regrinding by six new blades to micrometric accuracy. These reamers are produced in any desirable size and range in price from $1.80 for the smallest to $10 for the largest size.

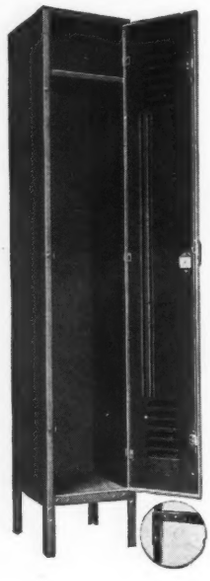
Attwood Grease Cabinet

A can that not only holds a supply of heavy oils and grease, but is a receptacle provided with effective means of transferring grease from the container, to any place desired, as well, is one of the products manufactured by the Attwood Brass works, Grand Rapids, Mich. It is known as the Atwood No. 1 Grease Cabinet, and lists at $12.50. It has two exclusive features, a patented overflow and a valveless pump. The construction of the overflow is such that any grease passing beyond the plunger, upon the upper stroke, is discharged back into the container, preventing accummulation of grease on the outside of the pump. The intake and delivery from the pump is controlled by a sleeve valve operated by a half turn of the plunger rod. One upstroke and half turn of the plunger will deliver ¼ ton of grease.



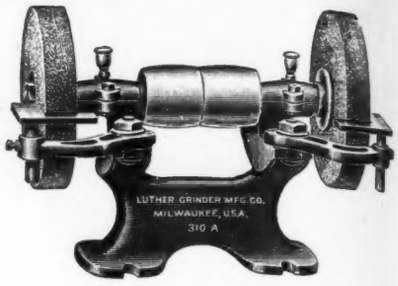
Central Commutator Truing Lathe

The Central Mfg. Co., Fairfield, Iowa, in offering this commutator truing lathe to the trade is offering the electrical service stations a lathe for armature testing, truing commutators and similar work. The head of the machine is of heavy construction and the spindle is hollow, receiving a No. 1 Morse taper shank center. End play is taken up by a collar. The tail stock has a self-ejecting center and can be set over for turning tapers. Carriage travel covers the complete length of the bed and is of strong construction, having slides adjustable to wear. Equipment includes tool post for standard tool holder, face plate and two lathe dogs. Specifications: Swing 7 in.; distance between centers of 30 in. bed, 18 in.; weight boxed for shipment 55 lb.; and 1/5th h.p. motor. Price complete, $60. Countershaft with tight and loose pulleys, belt shifter and cone pulley, $11.50 extra. The spur center wood turning, $1.50 extra. Motor, $22.50 extra.



Equipto Lockers

The Thos. Dunham Co., Inc., Aurora, Ill., manufacturers of labor-saving, shop and factory equipment, is offering a specially constructed standardized locker for service stations, known as the Equipto Locker. One of the features of this locker is the interchangeability of the backsides, tops and bottoms, thereby making it possible to build up any desired arrangement or to rebuild to suit new conditions. Construction is such as to enable it to withstand rough service, indefinitely A rigid frame of angle iron uprights, top and bottom members, all 1 x 1 x ⅛ in. angle reinforced and aligned at the corners with a ⅝ in. 14-gage angle brace riveted to frame at each corner. The front legs are equipped with adjustable feet for making adjustment to any floor level. The doors are of cold rolled steel, flanged on all sides for rigidity. Standard equipment includes hat shelf, three double-prong hooks, padlock attachments, Yale lock, two keys and a master key.



Luther Grinder

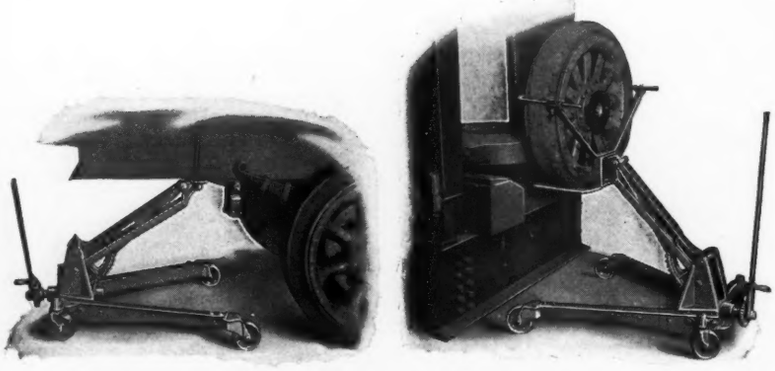
Designed for use in maintenance work, the No. 175 railway grinder, offered by the Luther Grinder Mfg. Co., 28-289 S. Water St., Milwaukee, Wis., is particularly applicable in service station work. It may be attached to tool bench, where it is always available for sharpening all edged tools. It includes chisel and plain guide, and twist drill attachment, as regular equipment. A flexible shaft grinding attachment and flat drill attachment can be obtained extra if desired. This grinder retails at $15.

G T D Hexagon Rethreading Die Set

This is one of the many sets put out by the Greenfield Tap & Die Corp., Greenfield, Mass. The dies of this particular set, designated as No. 473, are used exclusively for repair work, for dressing over bruised or rusty threads. They can be used in bit braces, sockets, monkey wrenches, etc., and may be conveniently used in many other ways as well. Cutting ranges from ¼ to ⅜ USS; and ¼ to ¾ SAE. The price is $17.80.

Foxboro Compressometer

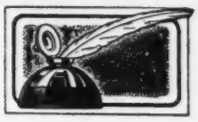
A device for measuring the amount of compression in cylinders and known as a Compressometer, is being offered by the Foxboro Co., Inc., Foxboro, Mass. Briefly, this instrument has a 2½ in. dial. One pointer moves with the pressure, the other indicates the maximum pressure; the resetting head turns maximum pointer back to zero. Connections are furnished to fit any sized spark plug caps. Calibrations: 0 to 100, 0 to 150, 0 to 200 lb.



Two Views of the New Weaver Hi-Lift Jack

A new addition to the line of shop equipment put out by the Weaver Mfg. Co., Springfield, Ill., is what is known as the Hi-Lift Jack, which was specially designed with an extreme high lift to elevate either the front or rear end of a truck. In this jack the cantilever principle of support has been successfully employed. Lift ranges from 7 to 38 in. Ample room is afforded the mechanic for working between the supports. By use of an attachment furnished extra this jack can ably be used for removing and transporting heavy truck wheels. This attachment can be placed on the jack and removed instantly without the aid of tools.

EDITORIALS



Why Some Salesmen Fail

WOULDN'T it be a good plan for the dealer to occasionally play the part of the prospect and let his salesmen sell him a truck? Wouldn't the dealer learn that some of his salesmen know a whole lot less about the product they are trying to sell than they think they do? And the chances are that the dealer would wake up to the fact that some of his salesmen are not selling trucks because they don't know what they're talking about.

A dealer, handling a truck having removable cylinder sleeves, recently told the writer this story, which goes to show that unless the salesman is thoroughly versed in the mechanical features of his product, he is liable to meet with prospects who know more about the product than the salesman does himself.

After coaching this young salesman for quite a period, the dealer at last put this salesman on the street. And he wasn't given the hardest prospects, either. Weeks passed and he didn't get a nibble. One particular order, which the salesman should have gotten, he didn't get. Now this dealer was so sure of this particular order, that he called on the buyer and asked him why he wasn't considered, or what was wrong with his product. "Nothing wrong with your product," said the buyer, "but that young chap you sent in here got my goat. He tried to impress me with the fact that your motor had sleeve valves in it just like the Knight motor. Of course, I knew what he was trying to get at, but I simply got disgusted with such salesmanship." Which simply goes to prove that "a little knowledge is a dangerous thing."

Give Them Some Definite Information

SERVICE is a commodity that can be merchandised the same as motor trucks, bodies, tires and other automotive equipment. It needs, however, to be advertised. The dealer having a well equipped service station must not depend too much upon the word of mouth advertising of the customer. Although the customer may be well satisfied with the kind of service he gets from the dealer's service station he isn't being paid to tell the world about it.

For the average dealer the best bet is to advertise his service through the medium of personal letters, sending out folders at definite intervals, or, if finances permit, by means of a well-planned mail campaign. Some dealers, of course, do this, in addition to running space in the daily papers. In too many cases, however, the information imparted to the customer about the service station is of a general nature. The saving in dollars and cents could be figured in connection with some of the equipment used in the shop. Take, for instance, the advantage of the portable work bench. The owner would be impressed with the saving made by eliminating a lot of useless steps made by the mechanic in travelling from the wall bench to the truck. Tell the owner about the new cylinder grinder you have just installed; how the use of arbor presses, wheel pullers, the valve-grinding and other tools around the shop make it possible for you to save him money on his repair work.

In other words, the owner must be sold on your time-saving tools and your mechanics. Simply announcing the fact that your shop has expert mechanics and "that we shall be pleased to estimate on the cost of overhauling your truck" is stereotyped stuff. Such literature does not interest the average owner in the least. But if that owner receives a personal invitation to come to the shop to see how certain jobs are being done by up-to-date machinery; why that job will stand the owner 25 per cent less than by the regular way, the owner will be sold on the fact that the concern he bought the truck from is trying to save money for him.

Support Must be Unanimous

AGAIN the subject of trade-ins is brought into the limelight, this time in conjunction with the agreement just adopted by the New Haven, Conn., Dealers' Association. Details of this plan appear elsewhere in this issue.

We are entirely in sympathy with any movement which will help curb the wild trade-in, but we do not see how any plan will function in any given locality unless **every dealer in that locality joins the organization.** There is only one way to curb the "shopper" type of truck buyer and that is, show him that his truck is worth just so much money and not one cent more. But if only a small percentage of the dealers are in sympathy with the appraisal bureau plan in any particular city, the trade-in problem cannot be cured. Every dealer must join such a movement and give it his wholehearted support. It is certainly high time that the dealers should realize that concerted action in this matter is necessary.

News of the Trade in Brief

Boston Show Brings Encouragement to Dealers

Since the Boston Show, New England motor truck dealers have felt very much encouraged. Many have gotten back some of the optimism which has been lacking in New England for some time. Although the truck dealer does not, as a rule, put much stock in show week as a sales builder, this year's show proved that the show had a very stimulating effect on the truck buyer.

More inquiries were developed as a result of the show than had been expected. Many New England truck users have been waiting for the show. They were anxious to find out whether prices had really reached the low level. The show assured them that holding off any longer wouldn't get them anything. And the show also proved to them that the truck manufacturers are today ready to furnish any kind of equipment for haulage purposes, road building, contractors' work, etc., that may be desired.

The thing which stands out prominently at the Boston truck show each year is the unusual collection of specially equipped chassis, of which there seemed to be a goodly number this year. Fire apparatus seemed to be much in evidence. Next came the large moving van bodies on long wheelbase chassis. Contractor dump trucks, ice-cream, coal, road strayers and all kinds of special body equipment was shown. The Reo agency showed a special nine-passenger sedan which, of course, is mounted on the Speed Wagon chassis. Buses were shown by a number of dealers. A few taxicabs were also exhibited. Only one newcomer was seen at the show, this being the Wachusett, built by the Wachusett Motors, Inc., of Fitchburg, Mass.

One of the exhibits, which attracted an unusual amount of attention, was the quarter sized model of the five-ton Autocar. This model was complete in every detail, with the exception of the inside of the motor, which consists of a small electric motor. In all other respects the model is a perfect replica of the regular job, being perfect in every detail. The gears shift perfectly. This model will be placed on permanent exhibition at the Smithsonian Institute, at Washington, D. C. Other models to be used for demonstration purposes are in the process of construction.

A radical departure in body suspension was shown by E. B. Badger & Sons Co. This company exhibited the Harper Hanger, which is what might be termed a simple universal joint suspension which allows the truck body to swing freely on its chassis in any direction. The revolutionary principle involved is centered in the Harper Hanger link, a twisted circle of steel mounted on transverse bars of steel secured at right angles to each other, the dependent bar on the body of the truck, the supporting bar on the chassis frame. Four to ten links are used, according to the size of the truck. It is claimed that this device reduces vibration of parts, prevents loosening of the body, greatly reduces skidding, prevents shifting of the load, etc.

Taken altogether the show accomplished its purpose to the satisfaction of all concerned. One thing which impressed the visiting dealer was the unusual number of exhibits of service tools and repair shop equipment.

Coming Events

SHOWS

April 26 to 29, 1922—Goldsboro, N. C. Third annual automobile show of the Goldsboro Automotive Trade Assn., at Planters Warehouse. Passenger Cars, Trucks and Accessories. W. C. Denmark, Mgr., Chamber of Commerce.

May 10 to 13, 1922—Williamson, W. Va. Annual automobile show of the Williamson Automobile Dealers' Assn. H. R. Stout, Mgr.

October 7 to 14, 1922—New York City. Electrical exhibit at Grand Central Palace. Electric Automobiles. Norman Maul, 130 East 15th St., New York City.

CONVENTIONS

Atlantic City, N. J., June 26 to July 1, 1922—25th Annual Meeting of American Society of Testing Materials at Chalfonte-Haddon Hall Hotel. J. K. Rittenhouse, Asst. Treas., 1315 Spruce St., Philadelphia, Pa.

Colorado Springs, Colo., June 19 to 24, 1922—Summer convention of the Automotive Equipment Association. Broadmoor Hotel. Wm. M. Webster, Comm., 1813 City Hall Sq. Bldg., Chicago.

Detroit, Mich., May 9 to 10, 1922—Annual meeting of the Michigan Automotive Trade Assn. W. D. Edenburn, Mgr.

Milwaukee, Wis., June 11 to 15, 1922—Eighteenth annual convention of Associated Advertising Clubs, 110 West 40th St., New York City.

New York City, May 22, 1922—Annual meeting of the National Highway Traffic Assn., at the Automobile Club of America, 247 West 54th St. Elmer Thompson, Sec., 247 West 54th St.

Olympia, Wash., July 21 to 22, 1922—Midsummer Convention of the Washington Automotive Trade Assn.

Philadelphia, Pa., May 10 to 12, 1922—Ninth Annual Convention of the National Foreign Trade Council. O. K. Davis, Sec., 1 Hanover Sq., New York City.

Phoenix, Ariz., April 24 to 29, 1922—Annual meeting of the United States Good Road Assn., and the Bankhead National Highway Assn.

Santa Barbara, Cal., October, 1922—Annual General Convention of the California Automobile Trade Assn. Robert W. Martland, Sec., Pacific Bldg., Oakland, Cal.

Trenton, N. J., May, 1922—Annual Convention of the New Jersey Automotive Trade Assn. H. S. Moore, Sec.-Treas., Trenton.

White Sulphur Springs, W. Va., June 20 to 24, 1922—Summer meeting of the Society of Automotive Engineers. Greenbrier and White Hotels.

FOREIGN EVENTS

Barcelona, Spain, May 24 to June 5, 1922—Automobile Show. Passenger Cars, Trucks, Tractors and Accessories.

Brussels, Belgium, November 10 to December 19, 1922—Automobile Show.

London, Eng., October 12 to 23, 1922—International commercial vehicle exhibition at Olympia.

Mexico City, Mexico, April 16 to 23, 1922—First Annual Automobile Show of the American Chamber of Commerce in the National Theater (23,000 sq. ft.). Passenger Cars, Trucks, Tractors and Accessories.

Prague, Czecho Slovia, April 22 to May 1, 1922—14th International Automobile Exposition, auspices Czecho Slovah Automobile Club, Prague.

Scheveningen, Netherlands, May 1 to 15, 1922—Automobile Exhibit. Address, No. 185 Spui., The Hague.

Highway Economics is Developed in Outline

A comprehensive outline of highway transport from the time when aboriginal man discovered the first wheel to the present moment has been prepared by Professor Lewis W. McIntyre, Assistant Professor of Civil Engineering, University of Pittsburgh, for the Highway and Highway Transport Education Committee.

Although making no pretense of being complete, the outline treats exhaustively of the various phases which make Highway transport one of the dominant subjects of the day. It was prepared at the urgent insistence of schools of engineering and economics, highway engineers and highway officials. The outline is expected to be the forerunner of text books on the subject, to which many of the leading economists and engineers in the country are giving their attention.

The outline, published in pamphlet form, may be adapted for classroom exercises and lectures, or it may be used by engineers and business men actively engaged in the manufacture of motor vehicles or the construction of highways.

The booklet is being distributed by the Highway and Highway Transport Education Committee, first to colleges and universities and then upon request to manufacturers and business men. It is interesting to recall that the committee, appointed in May, 1920, by Dr. P. P. Claxton, then Commissioner of Education, has been able within a comparatively brief period of time to enlist the interest of engineers and economists in a field of transportation held to be an increasingly important factor in the national life.

The sole function of the committee is the study of highway transport in its abstract phases, and to that end consists of men qualified by experience and training to undertake the study, and to encourage it.

Dr. John J. Tigert, United States Commissioner of Education, is chairman of the committee. Other members are Thomas H. MacDonald, chief, Bureau of Public Roads, Department of Agriculture; Colonel F. C. Boggs, Corps of Engineers, U. S. A., representing the War Department; Roy D. Chapin, representing the National Automobile Chamber of Commerce; F. I. Bishop, Dean of Engineering, University of Pittsburgh, representing the Society for the Promotion of Engineering Education; Harvey S. Firestone, representing the Rubber Association of America; W. S. Keller, State Highway Engineer of Alabama, representing the American Association of State Highway Officials; H. W. Alden, representing the Society of Automotive Engineers; W. C. John, acting director, and Pyke Johnson, secretary.

The booklet is being distributed by the committee from its offices in the Willard Building, Washington, D. C.

New Truck Association Elects Officers

Officers and directors of the newly formed National Association Motor Truck Industries were elected at a meeting at the Hotel Statler, Detroit, March 21. Martin L. Pulcher, vice-president and general manager of the Federal Motor Truck Co., was elected president. Other officers were chosen as follows: first vice-president, H. T. Boulden, vice-president of the Selden Truck Corp.; second vice-president, B. A. Gramm, vice-president of the Gramm Motor Truck Co., of Lima, O., a former president of the Motor Truck Manufacturers' Association; secretary, Moie Cook, secretary of the Service Motor Truck Co., Wabash, Ind.; treasurer, A. S. More, president of the Denby Motor Truck Co., and general manager, Don F. Whittaker, formerly general manager of the National Association of Motor Truck Sales Managers. These officers and J. W. Stephenson, vice-president of the Indiana Truck Corp., Marion, Ind.; Homer Hilton, vice-president of the Winther Motors, Inc., Kenosha, Wis.; F. G. Elder, vice-president of the Day-Elder Motors Corp., Newark, N. J., and J. E. Tracy, vice-president of Parker Motor Truck Co., Milwaukee, Wis., comprise the board of directors. Headquarters are to be maintained at 1157 Book Bldg.

Reeves on Trade Association Committee

The automotive industry is to be represented by Alfred Reeves, secretary of the National Chamber of Commerce, on the committee appointed by the Chamber of Commerce of the United States to study and report on the subject of trade associations. This committee will direct its inquiry with a view to determining in what manner trade associations can render the greatest service to business and the public. Other members of the committee are: Philip H. Gadsden, Philadelphia; Thomas S. Adams, New Haven, Conn.; Fred R. Babcock, Pittsburgh; Charles J. Brand, Pittsburgh; Henry S. Dennison, Framingham, Mass.; James R. MacColl, Pawtucket, R. I.; J. D. H. Morrow, Washington, and George Rublee, New York.

Truck Exports Show Slight Decrease for February

Total exports of automotive products from the United States during February gained 23 per cent over January, according to figures compiled by the Automotive Division of the Department of Commerce. A decrease of 2 per cent in number and 15 per cent in value of motor truck shipments was more than offset by an increase of 38 per cent in the value of motor vehicle parts exported as well as a gain of 29 per cent and 26 per cent respectively in the number and value of passenger car shipments. Passenger cars valued below $800 and over $2000, and motor trucks up to one-ton and above 2½ tons capacity made the best showing. Shipments of electric cars and trucks decreased nearly two-thirds.

Highway Traffic Association to Convene in May

A number of exceedingly interesting committee reports on problems vital to the progress of the American highway movement are to be featured at the annual meeting of the National Highway Traffic Association to be held at the Automobile Club of America, 247 West 54th St., New York City, on May 12. The meeting will consist of two sessions, 2 P. M. and 8 P. M., and an informal dinner at 6 P. M.

The reports of the national committees will be given by their respective chairmen, whose activities are well known in the highway and motor vehicle field. The reports will be rendered as follows: "Uniform Highway Signs," by Elmer Thompson, secretary of the Automobile Club of America; "Traffic Capacity and Widths of Highways Outside of Municipalities," by Herschel S. Smith, assistant professor of Highway Engineering and Highway Transport, University of Michigan; "Status of the Construction of Highway Curves and Recommended Practice to Increase Safety to Traffic," by H. Eltinge Breed, consulting highway engineer, New York City; "Highway Improvement Creed," by the Executive Committee of the N. H. T. A.; "Regulations Governing Speeds, Weights and Dimensions of Motor Trucks and Trailers," George H. Pride, president of Heavy Haulage Company of New York City; "License Fees and Motor Vehicle Taxation," Henry G. Shirley, roads and sanitary engineer, Baltimore County Roads and Sewerage Department; "Highway Transport Franchises," F. W. Fenn, secretary, National Motor Truck Committee of the National Automobile Chamber of Commerce, and "Highway Transport Clearing Houses," Tom Snyder, secretary of National Association of Commercial Haulers, Indianapolis.

The informal dinner will be given in the Grill Room of the Club and will cost $1.50 a cover. The public is cordially invited to the dinner. Reservations should be sent to Secretary Elmer Thompson, 247 West 54th St., New York City.

Treatise on Perpetual Inventory Prepared by Chamber of Commerce

The perpetual inventory, or stores control system, is strongly urged by the Fabricated Production Department of the Chamber of Commerce of the United States, as a better method in manufacturing establishments than the annual physical inventory, with its general disorganization and shutting down of the plant.

A practical treatise on the subject, which has just been issued by the Department under the title of "Perpetual Inventory or Stores Control," goes at length into the advantages of perpetual inventory and carries a series of illustrative forms.

Copies of the pamphlet may be had in limited quantities free of charge from the Chamber of Commerce of the United States, Mills Building, Washington, D. C.

Shuler Axle is Reorganized

The Shuler Axle Co., Inc., of Louisville, Ky., has acquired the entire assets of the Shuler Axle Manufacturing Co., and is already in operation for the production of front axles for motor trucks, trailers, tractors, motor buses, etc.

W. F. Robertson, of Cincinnati, president of the Robertson Steel & Iron Co., is president of the Shuler Axle Co. W. H. May, of Louisville, Ky., is secretary and treasurer of the new organization.

The Shuler Axle Co. is beginning operations with a paid-up capital stock of $150,000, which assures ample cash resources for immediate and continuous development of the business. The line of front axles which was made by the Shuler Axle Manufacturing Co. will be continued, and plans have been completed for additions to the line. An active manufacturing program is under way.

Frank A. Shuler, who is a familiar figure in the automotive world, will continue to act as general manager of the company, and will have personal charge over the increased manufacturing program of the new company. Harry W. Helms has been retained as sales manager. Other department heads who have been with the Shuler organization since its inception, will continue with their previous activities.

Equipment Manufacturers Hear Lee

Members of the Association of Automotive Equipment Manufacturers and their guests heard a very able talk by Gordon Lee, chief of the automotive division of the U. S. Department of Commerce, at a luncheon meeting in Chicago, March 15. Mr. Lee outlined the work that the department is doing to help automotive equipment manufacturers to market their product all over the world, and pointed out ways that should result in much greater export business in the near future.

Nathaniel Leverone is president of the association, N. H. Oliver is vice-president, and James T. Greenlee, treasurer. W. E. Green is the secretary-manager of the association.

Truck Reductions Still Continue

Ten truck companies have announced reductions averaging about 8.5 per cent since the last issue of the COMMERCIAL CAR JOURNAL. These reductions range from 3.5 per cent to 27 per cent, ranging in value from $50 to $980.

The companies reducing were: Watson Wagon Co., Larrabee Deyo Motor Truck Co., Nash Motors Co., Graham Bros., Eugol Motor Truck Co., Northway Motors Corp., Earl Motors, Inc., Wichita Falls Motor Co., Kelly Springfield Motor Truck Co., Pittsburgh Truck Mfg. Co., and the Sandow Motor Truck Co.

The passenger car reduction wave has subsided. In several cases increases in price have been noted.

Common Carrier Regulation Under Consideration

An informative report intended to stimulate discussion on the state regulation of Motor Vehicle Common Carriers has been prepared by Harry Meixwell, secretary of the Motor Vehicle Conference Committee which is represented by the A.A.A., the M. & A.M.A., the N.A.C.C., the N. A. D. A., the Rubber Assn. of America, Inc., and the Trailer Mfrs. Assn. of America.

Accompanying the report is a chart summarizing the salient features of the laws of the states regulating such carriers which shows what a variety of regulation exists among the several state governments.

It is extremely interesting to note the character of the state control and the bodies empowered to exercise this control. These agencies have consisted of State Public Utilities, or Public Service Commissions, Railroad Commissions, the Commerce Commissions as in the case of Illinois, the State Tax Commission of Alabama, the Arizona Corporation Commission and even the State Road Commission as in West Virginia.

A very broad field is covered by the powers wielded by the various state commissions. Such powers are listed as follows: Grant, refuse to grant, amend or revoke certificates of public conveyance and necessity; prescribe routes fix schedules; determine character of the service and promote the comfort and safety of traveling public; establish fares and rates; require reports and uniform methods of accounting; examine accounts and records; supervise fiscal affairs such as incorporation, capitalization of stock, etc., compel additions to, extensions of or betterments in physical equipment.

The report cites the most prevalent arguments for and against state regulation of the motor vehicle, but desires to obtain expressions of opinion from the industry before taking any definite stand in the matter. In this regard it says, "The motive of this discussion of state regulation of motor vehicles used for hire is informative only. It is not intended and in no way must be regarded as favoring either side or the other of the question. For this reason the conference committee will appreciate any information; arguments pro and con; corrections and criticisms which all those who read this discussion may have to offer, especially if such material includes the practical experiences that have resulted from regulation by the states where it is now in force. How important this is can only be seen from the fact that in 1923 legislators of 42 states will meet in regular session and doubtless be called upon to make decisions on scores of bills vital to motor vehicle common carriers. The Conference Committee hopes at this time to be of service in laying before all concerned, facts and arguments which will facilitate the passage of only such laws as are scientifically correct and fair alike to motor vehicle common carriers, competing common carriers and the public.

Federal Aid Must Continue for National Highways

A rider providing for an appropriation for Federal aid for highway construction for 1923, 1924 and 1925 attached to the Post Office appropriation bill, has been reported out by the Senate Committee on Post Offices and Post Roads, of which Senator Charles E. Townsend is chairman. The rider calls for an appropriation of $50,000,000 in the fiscal year of 1923, $65,000,000 in 1924 and $75,000,000 in 1925. The first amount becomes available July 1 of the present year and is essential to the continuation without interruption of the highways building program. This measure also contains appropriations for forest roads of $7,500,000 for each of the fiscal years of 1924 and 1925.

The bill has passed the House without a rider, and accordingly, if accepted by the Senate must be referred back to the House for approval. The sums mentioned, says a recent N. A. C. C. bulletin, represent the absolute minimum requirements for the highway program.

Ford on Eight-Hour Basis

A 40-hour week schedule operating five days a week and eight hours a day, has been inaugurated by the Ford Co., at the Highland plant, and will be extended to the other plants in the near future. This new plan calls for the addition of 3000 men to take care of the company's present demands. All men now in the employ of the company will be continued on the $6 a day minimum wage, all new men will be employed at a $5 a day scale.

Multibestos Elects Officers

C. W. Bunker has been elected treasurer and assistant to President Stoughton Bell, of the Multibestos Co., of Walpole, Mass., manufacturer of brake and clutch linings. Mr. Bell will assume, it is said, beside his duties as president, the responsibilities of general manager and general sales manager. The other executives of the company are as follows: T. J. Daley, secretary; T. H. Bateson, superintendent.

William S. Haggott

Who has for several years served in the capacity of cable sales manager of the Packard Electric Co., Warren, O., has been transferred from the home office to the field organization of the same company in the capacity of field engineer, with headquarters at 752 David Whitney Bldg., Detroit.

The Unit Manufacturers' Parts Service Plan is Nearly Complete

Plans are practically complete for the establishment of forty major parts supply depots and over 300 sub-depots all over the United States and Canada to supply over night service on genuine parts for the following motor truck units:

Red Seal Continental engines
Timken axles
Brown-Lipe transmissions
Borg & Beck clutches
Spicer universal joints and propeller shafts.

Over 35 of the main supply depots have been established to date, many of them for several years, and the sub-stations are being located as fast as possible. These depots are so placed, with respect to the trucks in the territory, that genuine parts of each of these units may be delivered within 24 hours of the order.

The companies manufacturing these units will eventually establish similar stations in all foreign countries where motor trucks containing these units are in service, the aim of the manufacturers being to make it possible to keep in continuous operation, insofar as service is concerned, all motor trucks wherever they may be, in which these units are used.

It may be authoritatively stated that there is no physical or financial combination of manufacturers concerned in connection with this service, the whole object of the plan being merely to make it possible for the owner operating an assembled truck to get better service, day and night, than the owner of any other commercial car manufactured.

The plan will lower the cost of parts to the truck owner, it will tend to draw him away from the use of inferior imitation parts, and will maintain the guarantee on his units which the use of imitation parts would immediately invalidate.

With these supply depots in operation, the truck manufacturer, distributor and dealer no longer has to invest huge sums of capital in parts stores to keep trucks on the road, and the capital which formerly tied up in parts may now be used in expanding the sales effort on the assembled truck.

National advertising of the quick accessibility of these parts stations will be carried on to apprise owners or prospective owners of the wisdom of purchasing trucks using these units, and a widespread trade paper advertising campaign will also be used to acquaint dealers and prospective dealers with the advisability of handling trucks for which such adequate service is supplied.

Final details of the plan will be announced shortly.

Authority has been given at a special meeting of stockholders to change the name of the International Motor Truck Corporation of New York to that of the Mack Trucks, Incorporated. This new name will identify more closely the name of the product, the Mack motor truck, with that of the manufacturer. The firm announces that the name will be available about the 15th of April.

Personal Items

R. G. Alexander has become a member of the selling organization of the Union Motors, Inc., Los Angeles, and has been placed in charge of the truck sales department, where he will supervise the distribution of Maxell trucks.

Francis W. Davis, Councilor of the S. A. E. and consulting engineer of the truck department of the Pierce-Arrow Motor Car Co., Buffalo, N. Y., has presented his resignation to that firm. Mr. Davis states that he is not prepared at this time to announce any definite plans for the future beyond the probability of engaging in consulting work next fall.

J. W. David, who for the past five years has been connected with the Philadelphia branch of the General Motors Truck Corp., has been transferred to the St. Louis branch, where he succeeds C. E. Pagett as branch manager.

Carl J. Fitch has returned to California as special factory representative of the Samson Tire and Rubber Corp., of Los Angeles. He will make his headquarters at San Francisco and will have charge of the Northern California district.

Harry Fowler has been appointed district sales manager of the Cincinnati territory of the Carborundum Co., Niagara Falls, N. Y., effective July 1. He will succeed Charles R. Cox, who will be transferred to the main offices at Niagara Falls, where he will take up his duties on sales statistics.

Paul H. Geyser has been elected vice-president and director of the Yellow Cab Manufacturing Co., of Chicago, Ill. Mr. Geyser began his career 13 years ago as a mechanic with the company at $18 a week.

Chan Johnson has been appointed Detroit Branch sales manager of the Olds Motor Works, manufacturer of Oldsmobile passenger cars and trucks.

E. Z. Jones, of Chicago, formerly director of sales for the Winther Motor Corp., of Kenosha, Wis., has recently accepted a position as supervisor of sales in the New England and Middle Atlantic States for the Anderson Motor Co., of Rock Hill, S. C.

Walter S. Keen, formerly connected in an executive capacity with the Republic Motor Truck Co., both of Alma, Mich., and on the Pacific Coast, has joined the Garlock Sales Co., of Lansing, Mich., as sales manager.

George G. Kloss has resigned from the Gillette Rubber Co., where he was Eastern District sales manager, to accept a position as special representative with the Delion Tire & Rubber Co., of Baltimore.

F. L. Lisman, formerly of the copy department of N. W. Ayer & Son, Philadelphia, advertising agents, has been added to the staff of the Homer McKee Advertising Co., Indianapolis. Malcolm G. Rollins, formerly with the J. Walter Thompson Co., of Chicago, has been appointed production manager of the McKee Agency.

S. M. MacDonald and A. L. Haskell, well known in the automotive trade as manager and assistant manager, respectively, of the Boston office of the New York Lubricating Oil Co., will actively represent the National Lubricants Co., maker of Autograph lubricants.

John E. Maloney, widely known in equipment sales circles, has joined the Parish & Bingham Corp., as assistant sales manager. Mr. Maloney, in assuming his new position, severs a connection of some ten years with the Hydraulic Pressed Steel Co., and its interests, in the latter portion of which he has been general manager of the pressed steel end of the business.

Charles Morgana, who has acted as vice-president and director of the C. H. Wills & Co. since the inception of that organization, has resigned to become general superintendent of the Maxwell Motor Corp., Detroit plant. He was formerly with the Ford Motor Co.

A. T. Niederluecke has been appointed secretary and treasurer for the Fuetterer Battery Service Co., St. Louis, Mo., distributor of the Cincinnati battery and of Warco oil.

H. T. O'Neill, who has been identified with the sale of Reo Speed Wagons for several years, has become retail sales manager of the International Harvester Co. branch at San Francisco.

E. F. Paepper has become associated with the Casco Motors, Inc., of Portland, Me., in charge of production and engineering. Mr. Paepper's former connections were with the Republic Motor Truck Co., of Atlanta, Ga.

Charles E. Pagett, who recently resigned as branch manager of the General Motors Truck Corp., at St. Louis, has been appointed director of sales for the De Luxe Automobile Co., Oldsmobile distributor.

Frank J. Pardee, for many years identified with the automobile trade in Chicago, and for a long period sales manager of the Diamond T Motor Truck Co., has been named general sales manager of the Leach Motor Car Co., of Los Angeles.

A. G. Partridge has resigned as vice-president of the Star Rubber Co., of Akron, O. He was for many years vice-president and general manager of the Firestone Tire & Rubber Co. His future plans are unknown.

W. H. Pratt is the new manager for the New York branch of the Bearing Service Co. C. R. Norris will act as Mr. Pratt's assistant manager.

C. J. Simpson has been made general manager and vice-president of the Pacific Nash Motor Co., of San Francisco. He comes from the Utah branch of the Nash Co., where he served in a similar capacity.

Ralph M. Sitterley has established offices at 149 Broadway, New York City, where he will act in the capacity of foreign sales manager of American manufacturers of electrical specialties, automotive products and equipment and marine supplies.

W. B. Stamford, formerly engineer with the S. F. Bowser & Co., at Philadelphia, has joined the St. Louis Pump & Equipment Co., as district manager, in charge of sales in the Pittsburgh district.

Earle T. Sutton, former advertising manager of the Denby Motor Truck Co., has been appointed to the factory staff of the Signal Truck Corp., of Detroit, according to M. B. Hoagland, president of the Signal Co.

W. Mellville Taylor, until recently connected with the Philadelphia Storage Battery Co., of Philadelphia, has been appointed to the managership of the Eastern Sales of the Foster, Merriam & Co., Meriden, Conn., manufacturer of the Bear-Tite piston ring.

R. K. Trevor, for several years manager of the parts and accessories department of the Johnson Automobile Co., St. Louis Ford dealers, has been appointed sales manager of the A. C. Brake Co., also of that city.

Harry Unwin, former manager of the Chicago branch of the Reo Motor Car Co., has been made sales manager of the National Motor Car & Vehicle Corp., of Indianapolis.

Paul St. Elmo Webb has been added to the executive organization of the Hinkley Motors, Inc., of Detroit, in the capacity of sales promotion manager. Mr. Webb's experience has covered a broad range of service in the field of heavy duty transportation, both as an executive of sales and service and as a transportation engineer with the Diamond T Truck Co., of Nashville, Tenn.

H. K. Wheelock, who retired some time ago as the managing head of the Western Vulcanizer Mfg. Co., of Chicago, Ill., to regain his health, has returned to that company and has assumed his former position. Mr. Wheeler formed the company in Los Angeles in 1917 and developed the Dri-Kure vulcanizing method.

Thomas S. Witherbee is now connected with the Marko Storage Battery Co., as general sales manager and director of advertising. Mr. Witherbee has been in the battery business since 1897, and is well known in the automotive trade.

Removals and Trade Changes

The Liberty Spark Plug Corp., of 40 Hanover St., Boston, Mass., has purchased the assets of the Federal Corp., of Westfield, Mass., also the patent rights and trade mark of the Liberty spark plug, and will continue the manufacture and sale of these well known plugs.

The Stevenson Gear Co., Indianapolis, Ind., has completed negotiations for a branch plant at Detroit. The new factory will be used exclusively in gear production work, while the Stevenson Multiple Shaper will be manufactured at the main plant.

The Kendell Engineering Co., Fort Wayne, Ind., manufacturer of Kendell piston rings, has incorporated under the state laws of Indiana and is now known as the Kendell Engineering Corporation. Operations on a plant are to begin at once, says the company, as the extensive national business created warrants an immediate production.

Jamieson Bros., Moline, Ill., has moved from 1614 Fourth Ave. to 1420 Sixteenth Ave., due to the necessity for larger quarters. The firm distributes Samson trucks and also does a general garage and service business.

The Bassick Manufacturing Co., manufacturer of the Alemite Lubricant system, announces that it will move into its new plant at 2650 N. Crawford Ave., Chicago, between April 1 and 15. The increasing demand for the company's products has made larger quarters necessary.

The Stark Inland Machine Works has been purchased by a new organization called the Inland Products Co., of St. Louis. It is said that the new firm is amply financed and that the business will be managed by men of experience.

Literature

The Silent Cylinder is a distinctive little four-page house organ issued monthly by the Autocar Sales & Service Co., San Francisco branch. The sales talks are remarkable for their breeziness and their interest.

The Black & Decker Mfg. Co., Towson Heights, Md., has just issued a timely little catalog of portable electric drills and grinders. The booklet contains thumb-nail sketches of the company's pistol grip and trigger switch drills.

Service Station Management has been compiled by Charles L. Jones, formerly of the Ford Motor Co., Service Dept. The book contains useful chapters on labor charges, organization, shop layout, equipment, etc., and is framed to be of value to the established dealer as well as the man just entering the automotive field. Printed by D. Van Nostrand, New York; price, $2.

Aluminum and its Alloys has been published by D. Van Nostrand Co., 8 Warren St., New York City. It is a comprehensive scientific treatise on this useful element covering its properties, its thermal treatment and its industrial application. Written by C. Grard, Lt. Col. D'Artillerie, and translated by C. M. Phillips and H. W. L. Phillips, both of Cambridge, England.

NEW COMMERCIAL CARS

Transport Offers New Line of Trucks

ACCORDING to the Transport Motor Truck Co., Mount Pleasant, Mich., its new line of six models provides a range of service that covers the entire trucking field. There is a model classified for every service, as evidenced in the 2,000, 3,000, 4,000, 6,000, 7,000 and 10,000 lb. maximum capacities.

Chassis lubrication on all models is taken care of by the Alemite system, with well and wick oiling for spring and radius rod bolts.

Models 35, 55, 60 and 75 are equipped with specially designed double-action drive shaft service brake, which applies pressure equally to both rear wheels and checks the tendency to skid when turning a corner by proper control of the faster traveling wheel. A spring cushion on brake rod prevents grabbing action when brakes are suddenly applied. Brake shoes set up slowly, giving a positive, but smooth, velvety action.

Radius rod equipment on Models 35, 55, 60 and 75 make it impossible for rear axle to slip on springs, assuring perfect operation of braking mechanism under all conditions.

Electric lights, bumper, hubodometer, motometer, radiator guards, jack and tool kit are part of the equipment that is regular throughout the line. Rapid Transport is equipped with starter.

The Rapid Transport Model 15 travels 35 m.p.h., loaded to capacity. The Continental N 4-cylinder engine is used in this model. Rear axle is bevel gear type. Transmission is designed and built especially for fast 2,000-lb. transportation.

Fabric universal joints are used, with Snead shafts. This joint requires no lubrication and is easily serviced. This model is regularly equipped with pneumatic tires, electric lights, starter, electric horn, windshield, seat, running-boards, fenders, speedometer, jack and tool kit. Price, $1295.

Transport Model 25, 3,000-lb. maximum, is designed for somewhat heavier duty. It is powered by the Buda WU. It is capable of 30 m.p.h. under full load. A short turning radius and general flexibility particularly fit this model for quick work in narrow streets. Price, $1295.

Model 35 is specially designed for 4,000-lb. maximum loads. Every unit and every piece of material entering into the construction of this truck is adapted to 4,000-lb. service. Continental power plant is used. It also meets the requirements of bus service, as the long wheelbase permits mounting of commodious body.

The four-speed transmission makes possible the installation of an engine which effects a substantial saving in operation expense, yet providing ample power to haul full-capacity load. The road speed is 25 m.p.h. Price, $1885.

Model 55, 6,000-lb. maximum, $2385.

Model 60, 7,000-lb. maximum, $2585.

In general design and construction, Models 55 and 60, for 6,000 and 7,000-lb. maximum loads, respectively, are similar. Both of them have slow-speed, heavy-duty engines, with armored radiator of sufficient size and proper construction. The Model 60 Buda HTU engine has extra large crank shaft, cam shaft and bearings. The one used in Model 55 is a Continental C-2.

Engines have full force feed lubrication systems. Oil pumps are driven by gears off cam shafts and are therefore positive in action, forcing oil through drilled crank shafts to all bearings. The transmissions provide four speeds.

The frames are of heavy stock with deep side members and wide flanges. They are inswept between front wheels to permit small turning radius. The prices are $2385 and $2585, respectively.

In the model 75 a Buda YTU 4-cylinder engine is used—a power plant equal to the demands in 10,000-pound maximum hauling. Gas is superheated by exhaust manifold before drawn into engine.

Transmission has four speeds forward. Changing from one speed to another is accomplished by engaging large, heavy clutches. The rear axle is of the internal gear drive type, same general design as used on Models 25, 35, 55 and 60, except that it is larger and stronger. Entire weight of chassis, body and load, is carried on large, one-piece nickel steel axle.

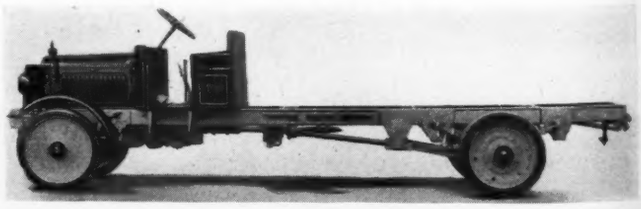
Model 75 has a 12-in. road clearance, which is ample to keep differential housing from dragging and to enable truck to travel anywhere an automotive vehicle can be operated. It is regularly equipped with cast steel wheels, which eliminate wheel trouble due to roads, loads, climate or other causes.

Loads are carried on long, wide resilient springs. Nickel steel spring and shackle bolts are used throughout the entire construction, with thorough oiling provided by well and wick system. The price is $3485.

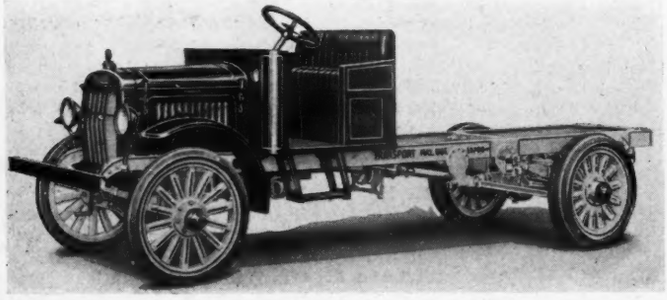
Denby in Good Condition

Along with an announcement of the reelection of its officers, the Denby Motor Truck Co., of Detroit, issued the following optimistic report:

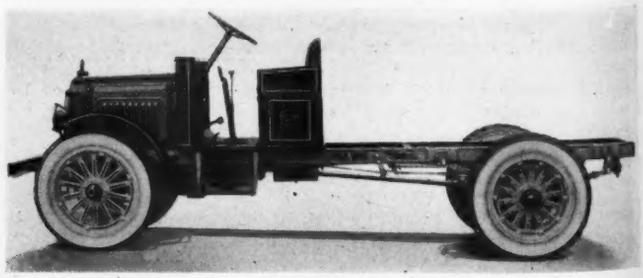
A decided improvement in truck buying is indicated for 1922. The demand is especially good on the ¾-ton and on the 1½-ton trucks. A new Model 35 2½ to 3-ton truck with all the latest improvements has recently been added to the Denby line and sales on this new model are already very promising.



Heavy-Duty Model 75 for 10,000 lb. Service.



Transport Model 60 for 7000 lb. Maximum Loads



Model 25 for 3000 lb. Maximum Loads

Radical Departure in Traylor Spring Assembly

THE Traylor Hiflex Spring Suspension is a form of rear-spring assembly, most revolutionary in character, now being incorporated by the Traylor Engineering and Manufacturing Co., Cornwalls, Pa., in all its models as well as the new bus model. Although not new, as it was installed experimentally on a truck as early as 1915, its recent acceptance as commercially economical and practical, by the Traylor Company marks it as the latest contribution to the progress of the industry. Long experimentation has thoroughly convinced the company of its complete practicability from every angle. From a mechanical standpoint, without regard to its inherent qualities advantageous to truck operation, this suspension has been proved entirely satisfactory, requiring practically no attention or repairs. Among the claims as to the advantages to be derived from this assembly made, which, it is stated, were based on actual usage, are the following: Greater economy in oil and gasoline; solid tire use and greater mileage; reduced depreciation and repair costs; elimination of spring breakage; increased truck capacity; continuous service; less damage to roads, and increased speed with greater factor of safety to fragile loads; driver comfort, and more hauls per day.

The accompanying illustration of the suspension disassembled conveys clearly the simplicity, strength and ruggedness of this unit.

The assembly consists of a hinge, shown at the top of the illustration, which is in the form of a rectangle with all sides parallel. This hinge has bearings at four points, making it impossible to actuate in any direction but vertical with the frame, This ability to maintain its vertical position insures stability of body and load. Any force tending to divert the action of the hinge from vertical is stoutly resisted by the tremendous friction at the four bearing points caused by any such force.

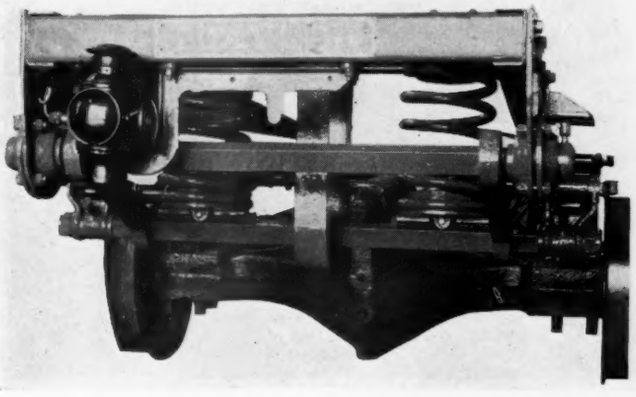
The springs are helical type and of a certain temper and resiliency, claimed to give the truck larger range of action and resiliency than obtainable through flat springs.

Again referring to the illustration, directly below the hinge can be seen the ordinary spring shackles, together with their bolts and fittings. On the extreme sides of the photographs are two steel casted disks which form the bottom seat upon which the helical springs rest. Next to these seats note the hinge bearing brackets, into which fit the hinge bearings, which are shown beneath and to the side of the bearing brackets. These bearings are steel castings, bronze bushed. Directly to the side of the hinge bracket are the top spring seats. In the center are two angle irons which support the top spring seat. Below, and on either side are the overload brackets, which prevent a complete deflection of the helical springs. For example, an excessive overload, or an unusual jolt can not cause a complete compression of the helical springs, as the flat springs will come in contact with the overload bracket before the complete compression of the helical springs has been made.

O. B. Line of Electric Vehicles Has New Improvements

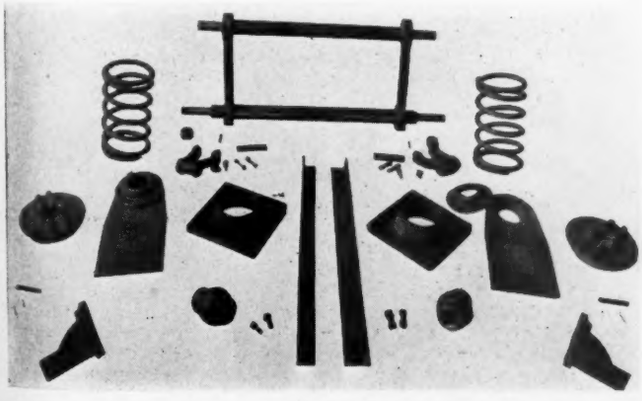
THE O. B. Electric Vehicles, Inc., Harris Ave. & Sherman St., Long Island City, N. Y., in describing its improved line of O. B. electric trucks, places particular emphasis on the ease of power-application and transmission-resiliency as the two most important characteristics of this line. The construction of the braking system is also expressed as being especially effective, in that positive action is obtained with minimum shock to the power plant, reduced skidding and tire burn. The necessity of carrying a large stock of replacement parts is said to be avoided because of the small number actually required to keep the vehicle in good repair.

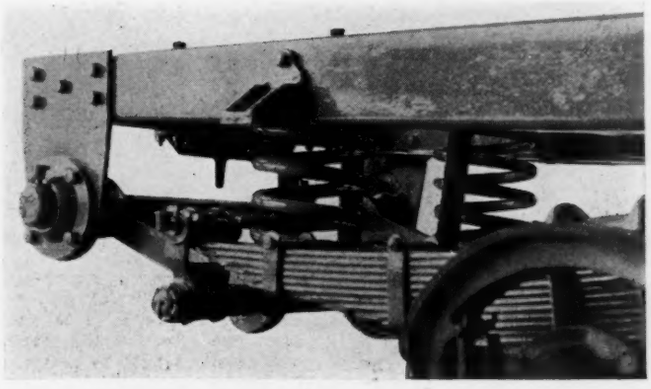
Expensive charging panels are not required as the charging current is controlled on the truck, which is fully equipped with a Sangamo ampere hour meter of the locomotive type, circuit breaker charging switch and current controller. To automatically charge the battery over night it is but necessary to attach the charging cable to the battery and set the switch and circuit breaker. The following morning after disconnecting, the truck is ready for a good day's work.



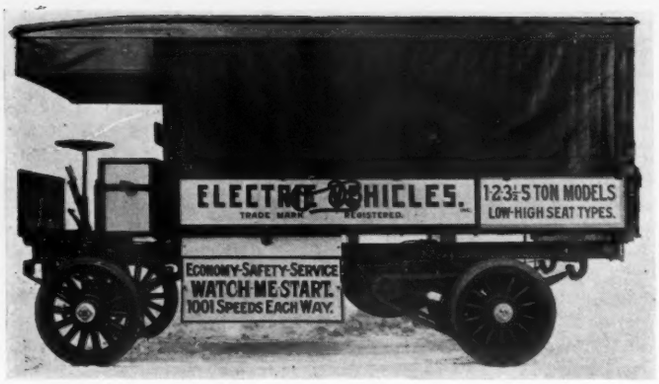
The motor is a standard General Electric automobile type. Power is transmitted from the motor to the differential and countershaft through a silent chain running in oil. Final drive is through chain, as it is considered most flexible and powerful.

The controller is of O. B. make, specially equipped with Allen Bradley current control compensators. This controller





Views Showing the Traylor Hiflex Spring Suspension Now Being Used on All Models Disassembled and Assembled. A Detailed Description is Contained in the Accompanying Article



One of the O. B. Line of Electrics

The most important features characterizing this line are said to be ease of power application and transmission resiliency.

not only gives 1001 speeds each way, but gives very close regulation of the current values when charging the battery as well.

All mitre fits and angle braces are eliminated from the built-up, two channel section, brace reinforced frame. The spring hangers and other fixtures are strong and securely riveted to the frame. Semi-elliptic Spring Perch springs, all eyes of which are bronze bushed.

A construction permitting the locking of both the service and emergency brakes is said to enable the truck to be stopped in the shortest possible time without shock. The service brake is foot operated and of the external contracting type; the emergency brake is hand operated and of the internal expanding type.

Front and rear axles are of special heat-treated alloy steel. Both front and rear wheels, which are of Archibald make, are equipped with solid pressed-on tires.

Wiring is simple. The wire is rubber covered and of ample carrying capacity; it is run in armored duct located in the channel member on the left side, where it is out of the way, yet accessible. The chassis is lubricated by an oil-gun pressure system.

Standard equipment includes: two electric side and one tail lamps, all of which are interchangeable; mechanical horn, foot operated; charging plug with short cable; hub cap wrench; safety switch key; service recorder; Sangamo ampere hour meter and circuit breaker; and oil gun pressure system of lubrication.

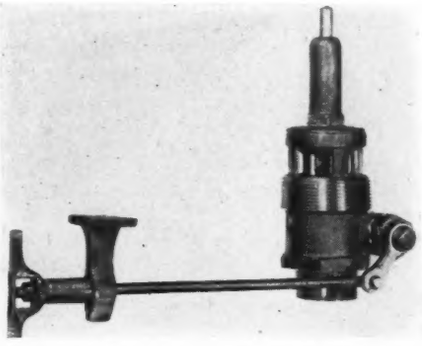
Heil Offers New Safety Tank Body

The accompanying views show a Heil 2,000 gal., elliptical tank mounted on a 7½-ton Mack for the Sinclair Refining Co., of Chicago, and details of an emergency valve for reducing the fire hazard.

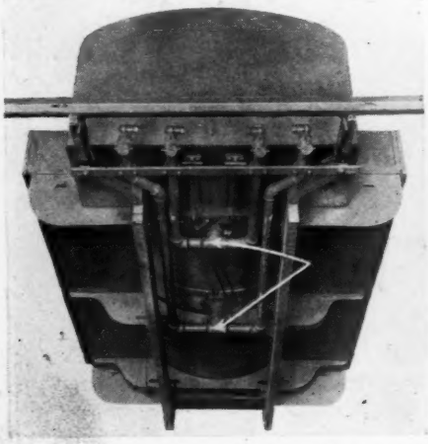
Naturally, in large cities, care must be taken that gasoline does not leak out of the pipe lines and create a fire hazard. To reduce this danger the Heil Co., Milwaukee, Wis., recently incorporated in the construction of all tanks, to be used in large city distribution, emergency valves. These consist of valves screwed into outlets of the tank and fitted with seats so that the gasoline cannot flow out of the tank when the valves are closed.

As the faucets attached to the tank are self-closing, it obviously follows that the emergency valves' sole purpose is to function in the event of a smash-up or rear-end collision. Should such an accident occur the resulting flow of gasoline can immediately be stopped.

The detailed views show how these valves are operated and how they are threaded to permit screwing into the outlet at the bottom of the tank. Heavy springs are used to keep the valves closed. The operating handle, which is readily accessible, is pulled forward to open the valve.



Close-up of the Heil Emergency Valve



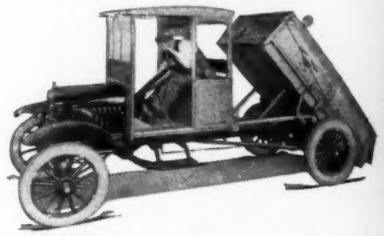
Showing Location of Emergency Valves

Heil 2000 Gallon Elliptical Gas Tank Equipped With Emergency Valves as a Preventive Against Fire

Eagle Universal Dump Body

The Eagle Wagon Works, Auburn, New York, is marketing a universal dump body for a Ford ton truck which is operated entirely from the seat and can be dumped in any period of time between three seconds and three minutes.

This body is featured by a simple and effective dump device which allows the driver to operate and control the dump body and its load at all times. The operating mechanism consists of a dump lever for lifting load preparatory to dumping, a winding lever for bringing the body back, a safety lock and a foot brake to control or stop the load.



Eagle Universal Dump for Fords

The foot brake is such that the load can be slowed up or stopped entirely and locked at any point of the dump. Maximum inclination is 64 degrees.

Capacity is 1¼ cu. yd. water level and 1½ cu. yd. rounding measure. The following is a resume of general dimensions: Inside measurements: 86 in. long, 43½ in. wide; depth, front, 13½ in.; rear, 17½ in.; total weight with equipment, 705 lb.

The sides of this body are of 1¼ in. Birch, having flare boards banded with steel. No. 16 gage steel is used for lining floor or entire interior as specified. Sills and subsills are of oak and measure 2¾ x 4½ in.; and 4 x 3 in. front, 5 x 3 in. rear, respectively. The price of this dump body without cab is $125.

TRUCK EQUIPMENT AND APPLIANCES

U. S. Shurout Emergency Traction Chains

Applicable to any make truck or passenger car and attachable in a few seconds, the emergency chain, offered by the United States Chain & Forging Co., Pittsburgh, Pa., is claimed to give the necessary traction for lifting out of mud or sand. This chain has an additional utility, in that it can be used as a lock to safe-

Shurout Chain Locked in Position

guard a truck or delivery car, to lock on a spare tire, or can be used, when connected in series, as a tow chain.

To attach it is simply necessary to make one loop around the spoke with the buckle end of the chain—pass chain around the tire and through the buckle—and then pull tight. The chain will lock itself without the use of catches or fasteners. It is claimed that these chains will not pull cross-wise, heat or bind the tire, nor become unfastened accidentally.

They are made in all sizes, accommodating tires from 3 to 12 in. in diam. and are made in thicknesses ranging from 3-16 in. to 13-32 in. in diam. The prices run from $.60 each for a 3 in. x 3-16 in. chain to $3.15 for a 12 in. x 13-32 in. chain.

St. Louis Visible Gasoline Unit Embodies New Features

Several distinct innovations in gasoline pump design are found in the latest St. Louis Visible Gasoline Unit made by the St. Louis Pump & Equipment Co. These include a practically unbreakable visible chamber, foolproof register, combination plunger and rotary pump, and special filter.

The pump is a combination of the rotary type and the plunger type. It is built to give continuous pumping service without loss of capacity. Under normal conditions gasoline is discharged from the pump to the measuring cylinder at a rate of 25 to 30 gal. a min. Drive is both the hand and electric. The electrically driven model is equipped with an especially developed motor. It is fully enclosed and vapor proof. An oil reservoir furnishes lubrication, which construction necessitates oiling only at very long intervals.

Specially designed quantity stops enable the operator to stop the flow of liquid at intermediate gallon and half gallon points with precision and accuracy.

The overflow has twice the area of the supply pipe, thus doing away with the possibility of overflowing the cylinder. All wiring electrical devices are enclosed and vapor proof. Valves are packed on the dry side to prevent any leakage. The

Combination Rotary and Plunger Type St. Louis Pump

filter medium is constructed of Monel metal and is unaffected by corrosive action. The filter element is easily removed for cleaning by removing the cap from the top. Water and other impurities are discharged from the filter through a small petcock on the exterior of the visible unit.

Foolproof meter registration is assured by a bypass valve which opens automatically when the operating lever is moved from the filling to the discharging position. This prevents filling the chamber while it is discharging.

The case enclosing the outfit is finished in brilliant red enamel and the castings are black Japanned. The electrically driven unit is equipped with a triple lock of the tumbler type, which locks the hose, the operating mechanism and the electric switch. The electric models are also equipped with an illuminated lettered globe 14 x 4, bearing either the phrase "Gasoline" or "Filtered Gasoline."

Jon-Con Truck Tire and Tube Protector

The Jon-Con Tire Protector Co., 2124 North 15th Street, Philadelphia, Pa., in presenting its Jon-Con Tire and Tube Protector for commercial cars to the market, states that it is different from other seemingly similar devices. These protectors are not only for use in old casings, although many are, but the Jon-Cons

Cutaway, Showing Fabrication of the Jon-Con Protector

were especially designed for use in new or good casings. They are made of one continuous moulded piece of firm reinforced elastic rubber, for placement between the casing and the inner tube.

The principal reason for casings prematurely going to pieces is that the fabric is broken or damaged, due in most instances to a stone bruise or other sharp abrupt bend. A Jon-Con protector equipped tire, because of the shock-absorbing bridge crested on the inside of the casing, distributes the peak of the blow to a wider area, thus saving the fabric from breaking.

Jon-Cons are longer in circumference than the casing, so that when installed they are compressed into place, not being stretched as the tube and casing are, which is the puncture-proof feature of the device. When a nail pierces the casing, which is stretched, it strikes the protector which is compressed and the force of the blow being greater than the resistance, causes the protector to spring in, thus forming a vacuum, as the air in the tube behind is not solid. The next revolution of the wheel bends the nail between the protector and the casing, thus preventing it from doing any harm until it can be removed.

These protectors can be easily installed without the use of cement or tools.

The Racine Auto Tire Co., of Racine, Wis., has resumed operations by order of the Federal Court. H. O. Smith is acting as a receiver of the company. A voluntary petition in bankruptcy, filed recently by directors of the company, was caused by the heavy operating losses of 1920. Efforts are now being made to affect a reorganization that will place the firm on its feet.

Russel Brings Out Special Bus Axle

The Russel Motor Axle Co., Detroit, Mich., division of McCord Mfg. Co., Inc., recently completed a new model especially for motor bus work. This double reduction internal gear type axle, it is claimed, will lend itself for bus work, because of its road clearance, and permits the use of low floor boards, because there is no large housing at the center.

Because of the necessity of placing the floor low, the tread was made 71 in., and the springs are underslung. The brake levers are also hung downward. The load to be carried by the rear axle is equivalent to that of a 2½ ton truck. Internal and external brakes are used for service work and an emergency brake at the rear of the transmission. The bearings for the bevel pinion have been increased and the single row bearing adjacent to the bevel pinion is of a larger series than that for the outer bearing.

Spiral bevel gears were adopted. Drop forged differential cases are used and the internal parts of the differential are of nickel steel. The drive shafts were increased in diameter to provide against additional deflection, because of the increased length.

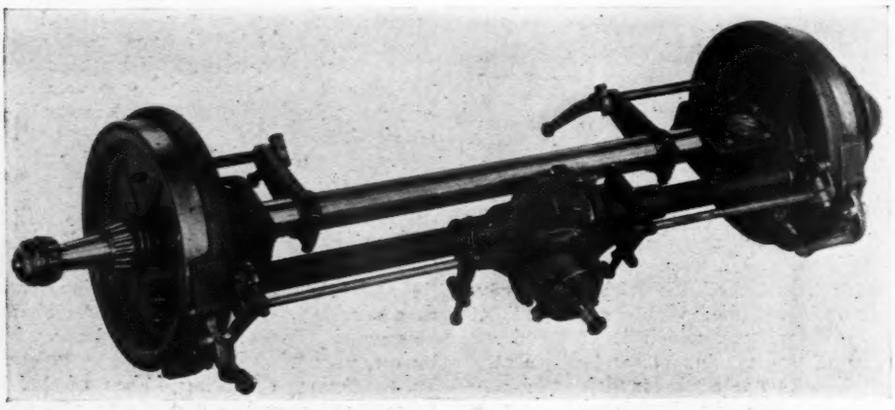
The left-hand side of the jackshaft housing tube is free to float so as to take care of axle deflection caused by the load imposed upon the spring pads. Torque reaction is taken through the right hand jackshaft housing tube. torque stresses are transmitted to the brake supports through two arms.

The jackshaft outer bearings are of the single-row radial type and are protected by a retainer. The spur pinion is mounted upon the outer splined end of the jackshaft and is a tight fit, and is retained in position by means of a cupped washer and a suitably locked cap screw. This construction permits of easy removal for replacement, without disturbing the rest of the assembly.

The internal gear is accurately piloted in the brake drum, to which it is secured by twenty-four rivets. The inside diameter of the brake drum is turned from the pitch line of the internal gear. A pressed steel enclosure having a hard felt retainer is attached and the felt is turned to fit the inside of the brake drum. This construction amply protects the internal gear from loss of lubricant or the admission of of dirt.

Taper roller bearings are used in the wheels and the recently adopted S.A.E. recommendations for wheel bearing mounting has been used.

Full wrapping internal and external brakes are used. A means for adjusting the external brakes without changing the lengths of brake rods is provided.



New Russel Double-Reduction, Internal Gear Type Axle Designed Especially for Bus Service

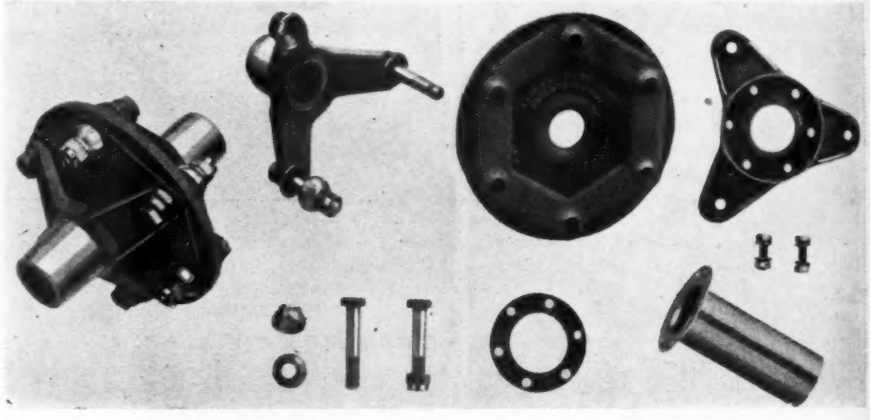
Fabric Disk Universal Joint

The Climax Cord Disk universal joint is said to deviate from the solely flat disk design by reason of improved features of raised cord links extending from bolt to bolt. These cord links, made of strong material possessing tension, receive the driving strain in the direction of the power transmitted.

The semi-spherical bosses at the bolt hole intersection are integral with the disk and are used as driving members, the metal members used in conjunction are formed to fit the bosses on the one side, and on the reverse side special cup washers are provided. This construction is claimed to overcome the difficulties experienced with the flat washer by eliminating the critical angularity of the working clearances between the washer diameters.

In tightening up the bolts the material in the bosses is put under a heavy pressure, compressing the flexible material and creating storage for absorbing shock and overload. It is unnecessary to make bolt adjustments after the initial installation. No welding of any character is done on these assemblies in the course of their manufacture, the metal members being attached to the driving tube by a special flanging process.

These universal assemblies, manufactured by the Climax Motor Devices Co., Chagrin Falls, O., are available in 5½, 6½, 7½ and 9-in. diam. disk sizes.



Disassembled Units of the Climax Cord Disk Universal Joint

K-D Gas Head Lamp

A gas head lamp, known as Model No. 15, is being offered by the K-D Lamp Co., 108-110 W. 3rd St., Cincinnati, Ohio, especially designed for rugged service on trucks.

The body is drawn in one piece from heavy gage steel. Props and hoods are securely riveted to the body. A ground Mangin mirror 6 in. in diameter is used.

K-D Model No. 15 Gas Head Lamp

A heavy-type hinge and knurled nut fastener secures the door in place. The reflector is of brass, highly polished and plated. The lamp is finished in black. Diameter of door, 10 in.; the distance between props, 8½ in.; and size of lava burner, ⅝ ft. Price per pair, $12.

Correction

In the March issue of the COMMERCIAL CAR JOURNAL, page 75, the caption giving details of the Ivory Moving Van illustration stated that the van was mounted on a Master chassis. This is incorrect. The line should have read: "This Two and a Half Ton Transport Truck Traveled 14,000 Miles in Seven Months."

Schwarz Interlocked Spoke and Steel Felloe Wheel

ONE of the newest developments in wheel construction is that which has been recently announced by the Schwarz Wheel Co., of Frankford, Philadelphia, Pa. This company, which is one of the leading advocates of the wood wheel in the automotive industry, is also the exclusive manufacturer of the interlocked spoke, which was invented seventeen years ago, and has been in successful service for that period. The interlocked construction absolutely prevents the spokes from slipping laterally at the hub, thus permitting the wheel to be shipped without hubs. In fact this company states that less than two per cent. of its product is shipped with hubs applied.

The interesting feature of the interlocked spoke is that it insures a tight arch of the hub under all conditions of service. This feature coupled with a steel felloe that is the acme of simplicity, provides a construction that makes the entire wheel impervious to swelling and shrinkage. Although this wheel has just been announced to the trade, it is now being used by the U. S. Motor Truck Co. on its "General Utility" model, on the Steinmetz electric truck, also on Atlas and Vim models, as well as on many of the leading passenger cars. Although the present construction is limited to the use of pneumatic tires, this company is also developing a wheel built along similar lines for solid and cushion tires.

From a manufacturing point of view the wheel is very interesting, in that it can be manufactured at a considerable reduction in cost in comparison with the standard wood wheel. Because of the interlocked spokes no glueing is required in assembling it. The method of manufacturing the wheel is very simple.

A "U" shaped felloe made of strip steel is rolled and formed to definite dimensions according to the size of the wheel to be built. This felloe is made about ¾ in. larger than the circumferential measurement of the finished wheel. Tenon cups are pressed at proper intervals for receiving the spoke tenons. These tenon cups and the tenon on the

The Schwarz Wheel Complete With Rim Clamps

end of the cups are distinctly shown in the accompanying illustration. With the exception of the tenon, the spokes are made the same as the spokes used in all Schwarz wheels. The assembly of the spokes with the felloe is easily accomplished. The length of the spokes and the circumferential measurement of the steel felloe are so proportioned and definitely determined that when the last spoke is placed in the assembly, it is necessary to drive it to position, thus giving sufficient tightness to the whole wheel assembly as to permit handling. The assembled wheel is then placed in an "upsetting" machine. This machine is equipped with shoes which fit the contour of the steel felloe and which contract the steel felloe, seating the spoke tenons firmly in the cups in the band, at the same time setting up the interlocked spokes at the center of the wheel and sizing the wheel to a true circumference and fixed dimension. The pressure this machine exerts varies from 15 to 27 tons, depending on the size of the wheel. The wheels are furnished in the following sizes:

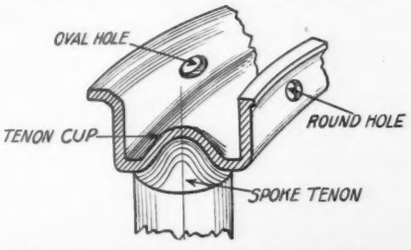
Rim Size	Rim Type	Diam. of Rim Bolt Circle. C	Inside Diam. Steel Felloe. D	Width of Steel Felloe. W	Height of Spoke Tenon. H	Gage of Steel Felloe. G
30 x 3½..	F	21¼	20⅛	1¾	⅜	5/32
32 x 3½..	B - C - E	23¼	22⅛	1¾	⅜	5/32
32 x 4 ..	"	22 5/32	21 5/32	1⅞	⅜	5/32
33 x 4 ..	"	23 5/32	22 5/32	1⅞	⅜	5/32
32 x 4½..	"	21 31/32	19 31/32	2	⅜	5/32
34 x 4½..	"	23 31/32	21 31/32	2	⅜	5/32

Also made in 34 x 5-in. size for trucks.

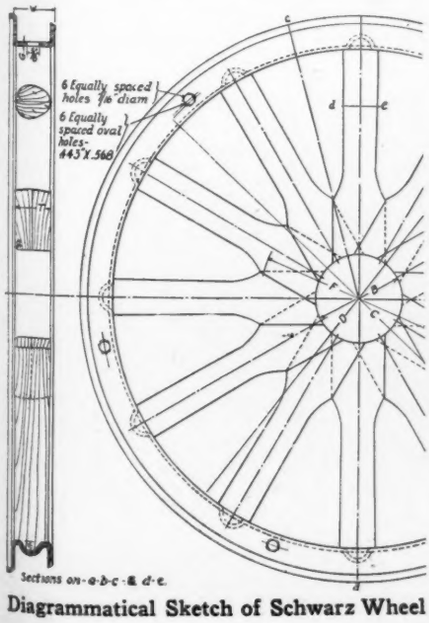
After the wheel is set up in the "upsetting" machine, it is transferred to a punch press, where the valve stem hole, also the round holes in the front wall, and the oval holes in the rear wall of the felloe are punched out. The wheel is now ready for boring and facing.

In the construction of this wheel, it will be noted that the full end grain of the spoke is utilized. Furthermore, the tenon cups are of sufficient depth to give adequate room for each tenon, at the same time thoroughly covering the end of each spoke, thereby preventing moisture from getting under the spokes.

The weight of the steel felloe wheel, as compared with a wood felloe wheel, both equipped with the same demountable rims, is approximately the same. If any difference in weight exists, it is a nominal amount and can be measured in ounces per wheel with the exception of the 4½-in. and larger sized steel felloe wheels, which are approximately 5 lb. per wheel lighter than the wood felloe wheel.

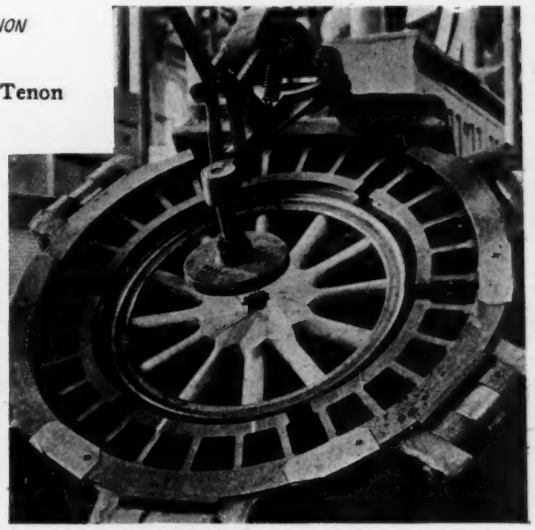


Showing Set-up of the Spoke Tenon



Diagrammatical Sketch of Schwarz Wheel

Close-up, Showing Outside of Tenon Cups



Upsetting Machine Which Shrinks the Felloe and Draws Up the Spokes

Price List of Truck Pneumatic Tire Casings, With Capacities and Inflation Pressures of Larger Sizes

	30 3½	32 4	34 4	32 4½	34 4½	33 5	34 5	35 5	36 x 6			38 x 7			40 x 8			42 x 9			44 x 10		
									Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure	Price	Carrying Capacity	Inflation Pressure
Achilles Rubber & Tire Co., Binghampton, N. Y.																							
Achilles Cord, non-skid	36.00	.....	.....	.....	.....	.....	74.25	.....	96.25	2200	90	148.00	3000	100	.....	....	...	.....	....	...	.....	....	...
Acme Rubber Mfg. Co., Trenton, N. J.																							
Acme Cord, non-skid	.....	32.00	34.00	41.00	43.00	52.00	.....	54.00	82.00	2200	90	115.00	3000	100	.....	....	...	.....	....	...	.....	....	...
Ajax Rubber Co., Inc., New York, N. Y.																							
Ajax Cord, non-skid	18.00	32.40	34.25	41.90	43.90	52.15	53.45	54.75	78.55	2000	90	113.85	3000	100	146.65	4000	100	.....	....	...	317.25	6000	130
Amazon Rubber Co., Akron, O.																							
Amazon Cord, non-skid	18.00	34.40	36.55	41.90	43.90	52.15	.....	54.75	78.05	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
American Rubber & Tire Co., Akron, O.																							
American Cord, non-skid	20.50	34.00	36.00	43.75	45.25	54.25	57.50	56.75	82.65	2300	90	115.40	3100	100	148.70	4100	110	.....	....	...	.....	....	...
Armstrong Rubber Co., Inc., Garfield, N. J.																							
Armstrong Super Size Cord, non-skid	18.90	34.00	36.00	44.00	46.05	54.75	55.70	57.50	86.00	2200	90	121.00	3000	100	156.00	4000	110	.....	....	...	.....	....	...
Beacon Tire Co., Inc., Beacon, N. Y.																							
Beacon Rib Skid Cord (Red Seal)	18.60	32.65	34.65	39.35	42.00	51.35	.....	52.00	.....	....	..	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Blekre Tire & Rubber Co., St. Paul, Minn.																							
Blekre Cord, non-skid	.....	33.45	35.40	41.95	43.90	52.20	.....	54.70	97.50	2200	90	.....	....	...	156.75	4000	110	.....	....	...	.....	....	...
Braender Rubber & Tire Co., Rutherford, N. J.																							
Braender Bull-Dog Super, non-skid	18.00	32.40	34.25	41.90	43.90	52.15	54.10	54.75	78.55	2200	90	113.85	3000	100	146.65	4000	110	.....	....	...	.....	....	...
Brunswick-Balke-Collender Co., Chicago, Ill.																							
Brunswick Cord, non-skid	20.00	32.50	34.50	42.70	44.85	53.20	53.75	57.50	80.45	2200	90	113.85	3000	100	146.65	4000	110	198.36	5000	120	.....	....	...
Burdick Tire & Rubber Co., Noblesville, Ind.																							
Air Bag Cord, non-skid	39.50	58.75	62.25	67.25	70.50	80.00	.....	83.00	143.00	2200	90	184.00	3000	100	238.00	4000	110	.....	....	...	.....	....	...
Canton-Blackstone Co., Youngstown, O.																							
Canton Cord, non-skid	20.00	32.40	34.25	41.90	43.90	52.15	.....	54.75	82.65	2200	90	115.45	3000	100	148.70	4000	110	.....	....	...	.....	....	...
Combination Rubber Mfg. Co., Bloomfield, N. J.																							
Combination Viking Cord, non-skid	18.00	32.40	34.25	41.90	43.90	52.15	.....	54.75	82.65	2200	90	.....	....	...	148.70	4000	110	.....	....	...	.....	....	...
Dayton Rubber Mfg. Co., Dayton, Ohio																							
Thorobred Cord, non-skid	18.95	32.75	34.95	41.75	43.75	51.75	53.50	54.50	78.95	2200	90	120.10	3000	100	155.20	4000	110	.....	....	...	.....	....	...
Empire Tire & Rubber Co., Trenton, N. J.																							
Empire Cord, non-skid	19.50	32.40	34.25	41.90	43.90	52.15	55.40	54.75	79.30	2000	90	112.20	2700	100	144.55	3650	110	.....	....	...	.....	....	...
Erie Tire & Rubber Co., Sandusky, O.																							
Erie Cord, non-skid	19.60	37.05	39.15	41.90	43.90	52.15	53.90	56.75	90.00	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Excel Rubber Co., Wadsworth, Ohio																							
Flint Cord, non-skid	24.50	46.30	48.95	52.35	56.50	65.20	.....	68.45	120.00	2200	90	170.00	3000	100	215.00	4000	110	.....	....	...	.....	....	...
Falls Rubber Co., Cuyahoga Falls, O.																							
Falls Cord, non-skid	19.50	34.00	36.50	43.25	45.75	60.00	62.50	65.00	92.00	2200	90	125.00	3000	100	160.00	4000	110	.....	....	...	.....	....	...
Federal Rubber Co. of Ill., Cudahy, Wis.																							
Federal Cord, non-skid	17.75	31.00	33.00	43.50	46.00	49.00	56.00	57.25	80.00	2300	100	115.00	3000	110	150.00	4000	120	.....	....	...	.....	....	...
Firestone Tire & Rubber Co., Akron, O.																							
Firestone Cord, non-skid	17.50	32.40	34.25	41.90	43.90	52.15	53.50	57.50	82.65	2200	90	115.40	3000	100	148.70	4000	110	235.00	5000	120	.....	....	...
Fisk Tire Co., Inc., Chicopee Falls, Mass.																							
Fisk Cord, non-skid	17.85	30.50	32.50	39.00	41.00	43.90	.....	51.50	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Gates Rubber Co., Denver, Colo.																							
Gates Cord, non-skid	18.95	32.85	34.90	42.80	44.80	53.20	61.60	55.90	85.40	2200	90	121.20	3000	100	156.50	4000	110	.....	....	...	.....	....	...
General Tire & Rubber Co., Akron, O.																							
General Cord, non-skid	19.70	34.95	37.85	44.45	46.55	54.90	53.75	60.90	83.40	2000	90	116.30	3000	100	153.15	4000	110	239.95	5000	120	334.30	6000	130
Gillette Rubber Co., Eau Claire, Wis.																							
Gillette Cord, non-skid	19.25	32.50	34.50	42.70	44.85	53.20	.....	55.85	78.55	2200	90	113.85	3000	100	146.65	4000	110	.....	....	...	.....	....	...
Goodrich, B. F., Rubber Co., Akron, O.																							
Goodrich De Luxe Cord	....	.....	.....	.....	.....	.....	53.50	.....	82.65	2200	90	115.45	3000	100	148.70	4000	110	.....	....	...	.....	....	...
Goodrich Silvertown Cord	18.00	32.40	34.25	41.90	43.90	52.15	.....	54.75	.....	....	...	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Goodyear Tire & Rubber Co., Akron, O.																							
Goodyear Cord, non-skid	18.00	32.40	34.25	41.90	43.90	52.15	53.50	54.75	82.65	2200	100	115.40	3000	110	148.70	4000	120	238.90	5000	130	333.90	6000	140
Goodyear Rut-Proof	....	.....	.....	.....	.....	.....	.....	.....	86.80	2200	100	121.20	3000	110	156.10	4000	120	.....	....	...	.....	....	...
Hewitt Rubber Co., Buffalo, N. Y.																							
Hewitt Cord, non-skid	18.75	32.40	34.25	41.90	43.90	52.15	56.00	57.50	82.65	2200	90	115.40	3000	100	.....	....	...	.....	....	...	.....	....	...
Hood Rub. Prod. Co., Inc., Watertown, Mass.																							
Hood Cord, non-skid	18.95	33.45	35.40	41.90	43.90	52.20	53.50	54.70	97.50	2200	90	123.50	3000	100	156.75	4000	110	.....	....	...	.....	....	...
Howe Rubber Corp., Inc., New Brunswick, N. J.																							
Howe Ultra Cord, non-skid	24.75	36.75	39.40	42.25	44.20	52.00	53.20	53.20	85.00	2200	90	120.00	3000	100	.....	....	...	.....	....	...	.....	....	...
India Tire & Rubber Co., Akron, O.																							
India Cord, non-skid	19.95	34.90	37.10	42.30	44.40	52.70	56.50	55.40	83.75	2200	90	118.90	3000	100	151.90	4000	110	.....	....	...	.....	....	...
Iowa Cord Tire Co., Inc., Des Moines, Ia.																							
Iowa Cord, non-skid	20.40	34.20	36.20	38.70	40.60	48.20	.....	50.55	71.80	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Kelly-Springfield Tire Co., New York, N. Y.																							
Kelly-Springfield Cord, Kant Slip	18.95	32.75	34.95	42.40	44.30	52.30	.....	54.40	90.90	2200	90	121.50	3000	100	157.50	4000	110	.....	....	...	.....	....	...
Kenyon Co., Inc., Brooklyn, N. Y.																							
Kenyon Cord, non-skid	17.50	31.50	33.50	38.50	41.50	52.15	.....	54.75	80.00	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Keystone Tire & Rubber Co., New York, N. Y.																							
Keystone Cord, non-skid	19.90	32.90	34.90	41.90	44.85	52.90	.....	54.75	82.90	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Kokomo Rubber Co., Kokomo, Ind.																							
Kokomo Cord, non-skid	18.00	32.40	34.25	46.10	48.30	57.35	.....	60.25	81.30	2200	90	.....	....	...	.....	....	...	.....	....	...	.....	....	...
Lee Tire & Rubber Co., New York, N. Y.																							
Lee P. P. Cord	24.75	44.35	.....	54.25	56.75	64.50	66.25	67.75	98.50	1970	90	135.05	2720	100	173.75	3595	110	.....	....	...	.....	....	...

McClaren Rubber Co., Charlotte, N. C.

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Future Service Policies Must Embrace Wider Scope

THAT dealers must have a complete stock of repair parts in their service stations and that the manufacturers should unceasingly strive to render all aid within their means to maintain their dealers' quota of parts as up-to-date as possible, are teachings that the COMMERCIAL CAR JOURNAL has been advocating for years. Indications resulting from correspondence and investigation show a continued growth toward greater efficiency in service station management. This tendency is largely due to the recognition by dealers for the need of improved service methods and co-operation on the part of manufacturers.

New Republic Building Set Aside for Purposes Exclusively Service in Nature

The new service policy of the Republic Sales Corp., which is here outlined, is an example of what many other manufacturers are doing along the lines of co-operating with the dealer in an effort to assist him in rendering better and more satisfactory service.

This system, which Colonel Frank E. Smith, the vice-president and general manager of the Republic company has been developing for the last two months, should be of the deepest interest to the trade. The policy outlined briefly is:

First—The development of the service department at the factory to permit a 24-hour service to branches, distributors and associate dealers.

Second—The entire reorganization of the service which has heretofore been extended to owners in their own localities.

The public's interest, of course, is in that amount of service which attends the truck after it has been put into owner service.

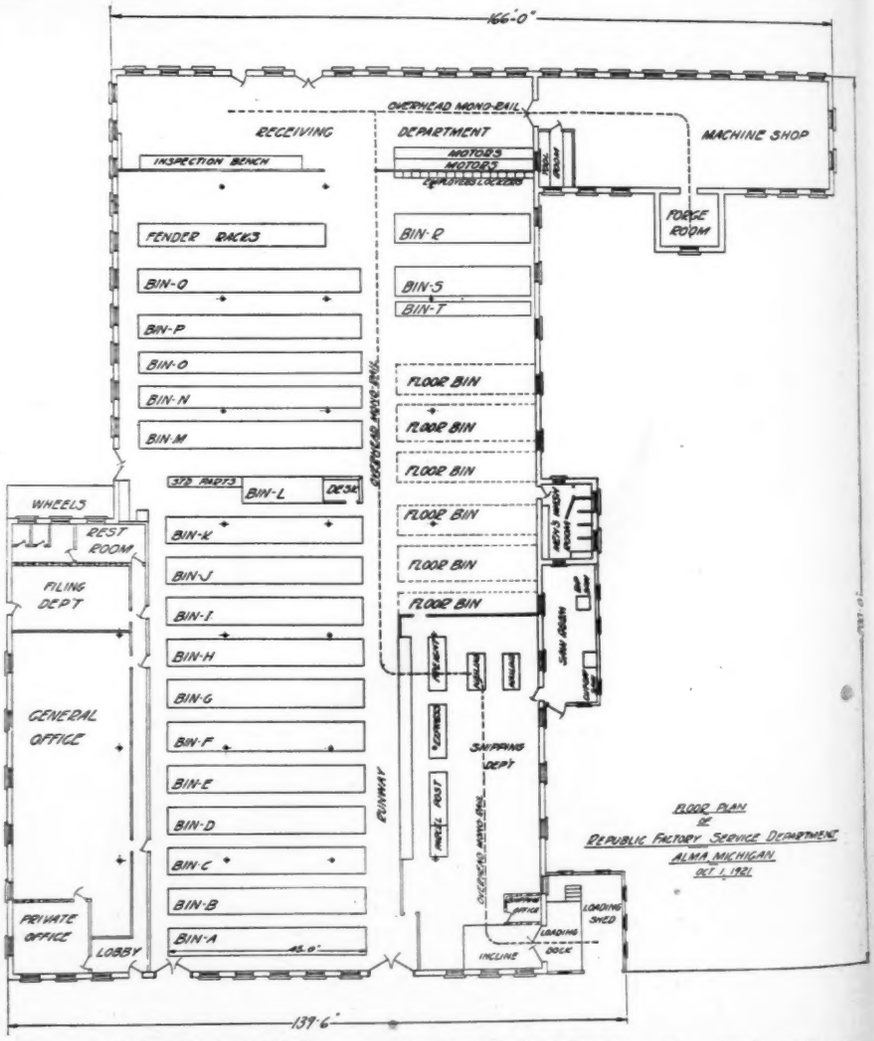
Under this plan the factory's interest and the distributor's and dealer's interest in the truck sold so will guard the truck that the owner may depend on its daily performance to the end of its career.

The plan includes supplying all distributors, branches and dealers with a stock of parts, based on the maximum requirements that might be expected from all the trucks sold and in use in their territories.

Service trucks are to be maintained at these establishments—the ambulances of the motor truck business. Accidents will happen in the best regulated of truck families. If a breakdown occurs, the driver of the truck has but to telephone to the service station, and service man at the other end of line, immediately dispatches the service machine with skilled mechanics and loaded with the parts required. Thus relief is afforded the stricken truck without unduly holding up the customer's quick delivery system.

In order to make possible this new system it was necessary to enlarge and improve the service system at the factory. An entire building has been set aside at Alma, Mich., for this department, which is now in charge of Gordon Cameron, widely known in the automotive world.

This service building has been laid out on scientific lines. The bins and their arrangement are a model of efficiency. Here are stocked parts for all Republic models under a new orderly system. Every modern appliance and convenience for the quick packing and shipping of parts has been provided. Every order reaching the factory for repair parts is shipped on the day of its receipt.



Layout of the Service Building. Parts Are Stocked Under a New Orderly System

Motor Transport Business Requires 4000 Trained Men

"In the next ten years 4000 specially trained men will be needed for service in the highway transport business," declared F. W. Fenn, secretary, National Motor Truck Committee, National Automobile Chamber of Commerce, in an address before the students and faculty of Massachusetts Institute of Technology.

Mr. Fenn said in part: "The whole field of the highway transport is practically virgin. It welcomes the entrance of trained men. Men of the very highest professional ability are daily turning to it; only recently a former governor entered the field.

The next great development in transportation will be a national service, making delivery at the store door of the consignee.

Mr. Fenn called attention to the fact that the committee on the development of the motor bus of the New England Street Railway Club recommended at its last monthly meeting that in many instances it would be preferable to install motor bus service instead of trackless trolley equipment. This was felt by the speaker to be the logical development in urban passenger transportation. There are now 20,000 motor buses servicing the congested and undeveloped areas of our principal cities.

Replacement Table—Corrected Monthly

Including Piston Ring Sizes, Carburetor Sizes, Hose Sizes, Fan Belt Sizes, Brake Lining Sizes and Truck Frame Dimensions

Note: Under Carburetor Inlet Diameter Will be Found Either the Size of Main Air Intake or the Gasoline Fuel Line

Fan Belt Type: V—V-Shape, F—Flat, R—Round

Name, Model and Tonnage	ENGINE											BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Acason R-1—1920	4	1/4	1	....	....	.....	.....	.....	.....	.....	.....	....	11 1/2	3	1/4	2	11 1/2	3	1/4	2	112	34
Acason RB-1 1/2—1920	4	1/4	1	....	....	.....	.....	.....	.....	.....	.....	....	11 1/2	3 1/2	1/4	2	11 1/2	3 1/2	1/4	2	112	34
Acason H-2 1/2—1920	3	1/4	1 1/8	....	....	.....	.....	.....	.....	.....	.....	....	13 1/2	3 1/2	1/4	2	13 1/2	3 1/2	1/4	2	130	35
Acason L-3 1/2—1920	3	1/4	1 1/4	....	....	.....	.....	.....	.....	.....	.....	....	16	3 3/4	1/4	2	16	3 3/4	1/4	2	163 3/4	35
Acason M-5—1920	3	1/4	1 1/2	....	....	.....	.....	.....	.....	.....	.....	....	18	4 1/2	1/4	2	18	4 1/2	1/4	2	167 1/2	35
Ace, Series A 1 1/2—1920	3	1/4	1 1/4	1 1/4	H	10 3/4	2 1/4	6 1/2	2	37 1/2	1	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	122 1/2	32
Ace, Series A2 1/2—1919-20	4	1/4	1 1/4	1 1/4	V	10 3/4	2 1/4	5 1/2	1 1/4	33	1 1/4	F	13	3 1/4	1/4	4	13	3 1/4	1/4	4	144 1/2	32
Acme 20-1	3	1/4	1	1	V	11	2	11	2	38 3/4	3/4	V	10 1/2	2 1/2	1/4	4	10 1/2	2 1/2	1/4	4	110 3/4	34
Acme 30-1 1/2	3	1/4	1	1	H	11	2	11	2	38 3/4	3/4	V	12	3 1/4	1/4	4	12	3 1/4	1/4	4	110 3/4	34
Acme 40-2	4	1/4	1	1	H	8	1 1/2	11 1/2	1 1/2	40	1 1/4	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	123 1/4	34
Acme 60-3	4	1/4	1 1/4	1 1/4	H	7	1 1/4	11	1 1/4	33 3/4	3/4	V	13	3 1/2	1/4	4	13	3 1/2	1/4	4	132 3/8	34
Acme 606-3	4	1/4	1 1/4	1 1/4	H	10	1 1/2	13	1 1/2	33 1/2	1 1/4	F	13	3 1/2	1/4	4	13	3 1/2	1/4	4	140 1/2	34
Acme 90-4 1/2	4	1/4	1 1/4	1 1/4	H	11 1/2	1 1/2	13	1 1/2	33 1/2	1 1/4	F	15 1/2	3 3/4	1/4	4	15 1/2	3 3/4	1/4	4	150 1/4	36
Acme 125-6 1/4	3	1/4	1 1/2	1 1/2	H	11	2	11 1/2	2	40 1/2	2	F	18	4	1/4	4	18	4	1/4	4	159 3/4	37
American 25-2 1/2	4	1/4	1/4	1 1/4	V	19	1 3/4	17	1 1/2	38	2	F	19	2 1/4	1/4	4	19	2 1/4	1/4	4	142	33
American 40-4	4	1/4	1/4	1 1/4	V	19	1 3/4	9 1/2	1 3/4	38	2	F	57	2 1/2	1/4	2	41 1/2	2 1/2	1/4	2	142	37
American 50-5	4	1/4	1/4	1 1/4	V	19	1 3/4	9 1/2	1 3/4	38	2	F	.....	.....	.....	.....	.....	.....	.....	.....	158	37
Apex C-1	3	1/4	1	1	V	7 1/4	2	12	2	36 1/2	7/8	....	42	2	....	2	41 1/2	2	....	2	102	35 1/2
Apex D-1 1/2	3	1/4	1	1	V	7 3/4	2	12	2	36 1/2	7/8	....	42	2	....	2	41 1/2	2	....	2	102	35 1/2
Apex E-2 1/2	4	1/4	1	1 1/4	V	7 1/2	1 1/4	8	2	32	1	....	54	2 1/4	....	2	53 1/4	2	....	2	128	31 1/2
Apex G	3	1/4	1	1	V	12	2	15 1/2	2	34 1/2	7/8	....	42	2	....	2	41 1/2	2	....	2	102	35 1/2
Armleder 20	4	1/4	1	1/4	V	12	1 3/4	16 1/2	1 1/4	31 1/2	2	F	11 1/2	3 1/4	1/4	4	11 1/2	3 1/4	1/4	4	104 1/4	32
Armleder 21-1 1/2	4	1/4	1	1/4	V	12	1 3/4	16 1/2	1 1/4	31 1/2	2	F	11 1/2	3 1/4	1/4	4	11 1/2	3 1/4	1/4	4	Opt	32
Armleder 40B-1 1/2	4	1/4	1 1/2	1/4	V	9 1/2	2	11 1/2	1 1/4	33 1/4	2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	32
Armleder 40C-1 1/2	3	1/4	1 1/2	1/4	V	10	1 1/2	11 1/2	1 1/4	35	1 1/4	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	32
Armleder KW-3 1/2—1916–21	4	1/4	1 1/4	1/4	V	12	2	16 1/2	1 1/4	35 3/4	2	F	42	3	1/4	1	16	3 3/4	1/4	8	Opt	38
Armleder KWC-3 1/2	3	1/4	1 1/4	1/4	V	10	1 1/2	16 1/2	1 1/4	35 3/4	2	F	42	3	1/4	1	16 3/4	3 3/4	3/4	8	Opt	36
Armleder HWB-2 1/2—1916–21	4	1/4	1 1/4	1/4	V	9 1/2	2	11 1/2	1 1/4	33 1/4	2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	32
Armleder HWC-2 1/2	4	1/4	1 1/4	1/4	V	10	1 1/2	11 1/2	1 1/4	35	1 1/4	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	32
Ateo B-1 1/2	4	1/4	1	1	V	11	2	11	1 1/4	31 1/2	2	F	25 1/2	2 1/2	1/4	4	18	2 1/2	1/4	4	109 3/4	32
Ateo B1-1 1/2	4	1/4	1	1	V	11	2	11	1 1/4	31 1/2	2	F	46	2 1/2	1/4	2	46	2 1/4	1/4	2	109 3/4	32
Ateo A-2 1/2	4	1/4	1 1/4	1 1/4	V	12	2	11	1 1/4	33 1/4	1 1/4	F	25 1/2	2 1/2	1/4	4	18	2 1/2	1/4	4	124 1/4	33
Atlas 21-1	3	1/4	1 1/4	1/4	H	9	2 1/4	14 1/2	2 1/4	31 1/2	1	F	40	2 1/4	1 1/4	1	22 1/2	2 1/4	1/4	1	84 3/4	33 1/4
Atterbury 20R-1 1/2—1920	4	1/4	1	3/8	....	8	1 1/2	14	1 1/2	38 1/2	1 1/4	F	11 1/4	3 1/4	1/4	4	11 1/4	3 1/4	1/4	4	122 1/2	34
Atterbury 7CX-2 1/2—1919–20	3	1/4	1 1/4	3/8	....	5 3/4	1 1/4	6 3/4	1 1/4	30 1/4	1 1/4	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	133 1/4	34
Atterbury 7D-3 1/2—1917-20	3	1/4	1 1/4	3/8	....	8	1 1/2	6	1 1/4	30 1/4	1 1/4	F	15 3/8	3 3/4	1/4	4	15 3/8	3 3/4	1/4	4	145 3/8	37 1/2
Atterbury 8E-5—1919–20	3	1/4	1 1/2	3/8	....	14	2	20 1/2	2	40	2	F	17 3/4	4	1/4	4	17 3/4	4	1/4	4	157 7/8	37 1/2
Autocar XXI-F-2—1915–20	4	1/4	1	1/4	....	3	1 1/2	4	1 1/2	.....	.....	....	16 1/4	2 1/2	1/4	4	13	2 1/2	1/4	4	91	34
Autocar XXI-G-2—1920	4	1/4	1	1/4	....	3	1 1/2	4	1 1/2	.....	.....	....	.....	2 1/2	1/4	4	13	2 1/2	1/4	4	114	34
Autocar XXVI-Y4—1920	3	1/4	1	1/4	....	3 1/2	1 1/2	3	1 1/2	48 3/4	1 1/2	F	25 1/2	2 3/4	1/4	4	25 1/2	2 3/4	1/4	4	121	34 1/4
Autocar XXVI-B-4—1920	3	1/4	1	1/4	....	3 1/2	1 1/2	3	1 1/2	48 3/4	1 1/2	F	25 1/2	2 3/4	1/4	4	25 1/2	2 3/4	1/4	4	176	34 1/4
Available H-1 1/2—1920	4	1/4	2 1/4	1	....	11	1 5/8	14	1 5/8	40	2	....	48	2 1/2	1/4	2	36	2 1/2	1/4	2	120	32
Available H-2 1/2—1916-20	3	1/4	2 1/4	1	....	11	1 5/8	14	1 5/8	40	2	....	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	144	32
Available H3—1916–20	3	1/4	2 1/2	1	....	11	1 5/8	14	1 5/8	42	2	....	16	3 3/4	1/4	4	16	3 3/4	1/4	4	168	36
Available H5—1916–20	3	1/4	2 1/2	1	....	12	2	16	2	40	2	....	18	4	1/4	4	18	4	1/4	4	168	38
Available H7—1919–20	3	1/4	2 1/2	1	....	12	2	16	2	40	2	....	72	3 1/2	1/4	2	72	3 1/2	1/4	2	168	38
Available H2—1921	4	1/4	2 1/4	1	1/4	12	1 5/8	14	1 5/8	40	2	F	48	2 1/2	1/4	2	36	2 1/2	1/4	2	120	32
Available H2 1/2—1921	4	1/4	2 1/4	1	1/4	V	12	1 5/8	14	1 5/8	40	2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	144	32
Available H3 1/2—1921	4	1/4	2 1/2	1	1/4	V	12	1 5/8	14	1 5/8	42	2	F	16	3 3/4	1/4	4	16	3 3/4	1/4	4	168	36
Available H5—1921	4	1/4	2 1/2	1	1/4	V	12	2	16	2	40	2	F	18	4	1/4	4	18	4	1/4	4	168	38
Available H7—1921	4	1/4	2 1/2	1	1/4	V	12	2	16	2	40	2	F	72	3 1/2	1/4	2	72	3 1/2	1/4	2	168	38
Avery 1—1920	3	1/4	....	1	....	....	10	2	6 1/2	2	31 3/4	1 1/2	F	19 1/2	2	1/4	4	18 1/2	2	1/4	4	85	34
Bell M1	4	1/4	1	1/4	V	10	2	10	1 1/2	32	2	F	36	2 1/2	1/4	1	42	3	1/4	1	110	34
Bell E-1 1/2	4	1/4	1	1/4	V	10	2	10	1 1/2	32	2	F	39	2 1/2	1/4	1	48	3	1/4	1	114	34
Bell O-2 1/2	4	1/4	1 1/4	1/4	V	10	2	10	1 1/2	32	2	F	48	2 1/2	1/4	1	54	3	1/4	1	126	34
Belmont A-1	....	....	1	1 1/2	....	.....	.....	.....	.....	.....	.....	....	32	2	1/4	2	31	1 1/2	1/4	2	78	34
Belmont B-1 1/2	....	....	1	1 1/2	....	.....	.....	.....	.....	.....	.....	....	41	2	1/4	2	40	1 1/2	1/4	2	120	36
Belmont D-2 Ton	4	1/4	1 1/4	....	V	10 1/2	2	12	1 1/2	34	2	F	51	3	1/4	2	46	2	1/4	2	119 3/4	34
Belmont F-3 Ton	3	1/4	1 1/4	....	V	21	2	14 1/2	1 1/2	37	2	F	.....	.....	.....	.....	.....	.....	.....	.....	137 1/2	34
Bessemer G-1—1921-22	3	1/4	1	1/4	V	11 1/2	2 1/4	10	2 1/4	42	3/4	V	47 1/2	2 1/2	1/4	2	45 1/2	2 1/4	1/4	2	98 1/4	34
Bessemer H-2-1 1/2—1921-22	3	1/4	1	1/4	V	11 1/2	2 1/4	10	2 1/4	43	3/4	V	56 1/2	2 1/2	1/4	2	55	2 1/4	1/4	2	116	34
Bessemer J2-2 1/2—1921-22	3	1/4	1 1/4	1/4	V	12	1 1/2	5	1 1/8	36 1/4	1 1/4	F	56 1/2	2 1/2	1/4	2	55	2 1/2	1/4	2	142 3/8	34
Bessemer K2-4—1921-22	3	1/4	1 1/4	1/4	V	11 1/2	2 1/4	10	2 1/4	39 3/8	1 1/2	F	58 1/2	3 1/2	1/4	2	30 1/4	4 1/2	1/4	1	157 1/2	38
Brinton C-1 1/2—1921-22	3	1/4	1/4	3/8	....	11	1 1/4	13	1 1/4	33	11	F	39	2 1/2	1/4	1	38	2 1/2	1/4	1	118	33
Brinton D-2 1/2—1914–1920	3	1/4	1 1/4	3/8	....	11	1 1/4	13	1 1/4	33	11	F	13	3 1/2	1/4	2	13	3 1/2	1/4	2	135 1/2	33
Brockway S2-1 1/2—1919–20	3	1/4	1	....	V	10 1/2	2 1/4	5 1/2	2 1/4	39	1 1/4	F	20	2	1/4	4	20	2	1/4	4	118	32
Brockway K4-2 1/2—1919–20	3	1/4	1 1/4	....	V	6 1/2	1 1/4	13	1 1/4	34	1 1/4	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	142	34
Brockway R-2-3 1/2—1919–20	3	1/4	1 1/4	....	V	9 1/2	1 3/4	14	1 1/4	34	1 1/2	F	15 3/8	3 3/4	1/4	4	15 3/8	3 3/4	1/4	4	176	36
Brockway T-5—1919–20	3	1/4	1 1/2	....	V	13	2	22	2	40 3/8	2	F	18	4	1/4	4	18	4	1/4	4	176	36
Buffalo Tractor-Truck	4	1/4	1 1/4	1/4	V	7	1 1/8	13	1 1/8	41 1/2	2	F	48 7/8	2 1/4	1/4	2	48 7/8	2 1/4	1/4	2	124	34
Capitol G1 1/2	3	1/4	1	1	V	18	1 1/4	18	1 1/4	32	1 1/4	F	47 1/4	2 1/2	1/4	1	33 1/4	2 1/2	1/4	1	120	32
Capitol H-2 1/2 and K-2 1/2	3	1/4	1	1	V	18	1 3/8	18	1 1/2	39 1/2	2	F	57 1/2	2 1/2	1/4	1	42 1/2	2 1/2	1/4	1	132	34
Capitol M-3 1/2	3	1/4	1	1	V	18	1 3/8	18	1 1/2	39 1/2	2	F	57 1/2	2 1/2	1/4	1	42 1/2	2 1/2	1/4	1	144	34
Case	3	1/4	1	1	V	7	1 1/2	6	1 1/2	47 1/8	2	....	25 1/2	2 1/2	1/4	4	24 1/4	2 1/4	1/4	4	106	31
Chicago C-1 1/2—1919–20	4	....	1	1 1/2	....	.....	.....	.....	.....	.....	.....	....	12 1/8	3 1/4	1/4	4	12 1/8	3 1/4	1/4	4	123	32
Chicago C-2 1/2—1919–20	4	....	1 1/4	1 1/4	....	.....	.....	.....	.....	40	2	....	13 3/4	3 1/2	1/4	4	13 3/4	3 1/2	1/4	4	135	32
Chicago C-3 1/2—1919–20	4	....	1 1/4	1 1/4	....	.....	.....	.....	.....	46	2	....	16	3 3/4	1/4	4	16	3 3/4	1/4	4	180	36 3/4
Chicago D-5—1920	4	....	1 1/4	1 1/4	....	.....	.....	.....	.....	46	2	....	18	4	1/4	4	18	4	1/4	4	180	36 3/4
Climber A-20	3	1/4	1	1 1/4	H	.....	.....	.....	.....	32	1	....	16	2 1/4	1/4	2	16	2 1/8	1/4	2	120	34
Clydesdale 120B-5-6	3	1/4	1	1/4	V	9	2	18 1/2	2	46 1/2	2	F	18	4	1/4	4	18	4	1/4	4	131	38
Clydesdale 90-3 1/2—4 1/2	3	1/4	1 5/8	1/4	V	9	1 1/2	14	1 1/2	42	1 1/2	F	16	3 3/4	1/4	4	16	3 3/4	1/4	4	143	38
Clydesdale 65EX 2 1/2—3	3	1/4	1 5/8	1/4	V	9	1 1/2	14	1 1/2	42	1 1/2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	132	33 1/4
Clydesdale 65X-2 1/2—3	3	1/4	1	1/4	V	11	1 1/2	11	1 1/2	40	1 1/2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	137	33 1/4
Clydesdale 42-1 1/2—2	3	1/4	1	1/4	V	15	2	12	2	41	.....	V	12	3 1/4	1/4	4	12	3 1/4	1/4	4	117	34
Clydesdale 20-1-1 1/2	3	1/4	1	1/4	V	15	2	12	2	41	.....	V	11 1/4	3	1/4	4	11 1/4	3	1/4	4	95	34
Clydesdale 18-3/4-1 1/4	3	1/4	1	1/4	V	15	2	12	2	41	.....	V	11 1/4	2 1/2	1/4	4	11 1/4	2 1/2	1/4	4	95	34

Replacement Table—Continued

Name, Model and Tonnage	ENGINE											BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Collier 18-1—1919–20	3	1/4	1	....	V	9 3/4	2	10 1/2	1 1/4	40	1	F	24	3 1/2	1/4	4	24	3 1/2	1/4	4	106	35 1/4
Collier 19-1½—1919–20	3	1/4	1	....	V	9 3/4	2	10 1/2	1 1/4	40	1	F	24	3 1/2	1/4	4	24	3 1/2	1/4	4	120	32
Collier 21-2—1918–20	3	1/4	1 1/2	....	V	6	1 1/2	10 1/2	1 1/4	40	1	F	27 1/2	3 1/2	1/4	4	27 1/2	3 1/2	1/4	4	132	32
Collier 22-2½—1919–20	3	1/4	1 1/2	....	V	6	1 1/2	10 1/2	1 1/4	40	1	F	27 1/2	3 1/2	1/4	4	27 1/2	3 1/2	1/4	4	144	32
Columbia G-2½—1921	3	1/4	1 1/4	1 1/4	V	11	1 1/4	10	1 1/4	38	1 1/4	F	55	3	1/4	2	50	2	1/4	2	132	32 1/2
Columbia H	3	1/4	1	1	V	12	2	11	1 1/4	38	1 1/4	F	42	2 1/2	1/4	2	40 1/2	1 3/4	1/4	2	120	32 1/2
Commerce T-1500	3	1/4	1	1/4	V	10	2	10	2	44	3/4	V	50	2	1/4	2	48 1/2	2	1/4	2	92 5/8	34
Commerce 12-3000	3	1/4	1	1/4	V	10	2	10	2	44	3/4	V	45	2 1/2	1/4	2	43	2 1/4	1/4	2	99 5/8	34
Commerce 16-4000	3	1/4	1	1/4	V	10	2	10	2	44	3/4	V	50 3/4	2 1/2	1/4	2	48	2 1/4	1/4	2	108 5/8	34
Commerce 18-5000	3	1/4	1 1/4	1/4	V	6	1 1/2	11	1 1/2	33	1 1/4	F	50 3/4	2 1/2	1/4	2	48	2 1/4	1/4	2	128 5/8	34
Concord A-2—1921	4	1/4	1 1/4	1/4	H	11	2 5/8	9 1/2	1 1/2	34	2	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	108 1/4	32 1/4
Concord AX-2—1921	4	1/4	1 1/4	1/4	H	11	2 5/8	9 1/2	1 1/2	34	2	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	122 3/4	32 1/4
Concord B-3—1921	4	1/4	1 1/4	1/4	H	11	2 5/8	9 1/2	1 1/2	34	2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	122 1/2	32 1/4
Concord BX-3—1921	4	1/4	1 1/4	1/4	H	11	2 5/8	9 1/2	1 1/2	34	2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	155 5/8	32 1/4
Corbitt E-1—1917–20	3	1/4	1	1/4	....	8	2	14	2	38	5/8	V	19	2	1/4	2	19	2	1/4	2	105	34
Corbitt D-1½—1916–20	3	1/4	1 1/4	1/4	....	8	2	14	2	38	5/8	V	45 1/4	2	1/4	1	45 1/4	2	1/4	1	120	34
Corbitt C-2—1915–20	3	1/4	1 1/4	1/4	....	14	1 1/4	13	1 1/4	36	1 1/4	F	51 1/2	2 1/4	1/4	1	51 1/2	2 1/4	1/4	1	138	35
Corbitt B-2½—1916–20	3	1/4	1 1/4	1/4	....	14	1 1/4	13	1 1/4	36	1 1/4	F	51 1/2	2 1/4	1/4	1	51 1/2	2 1/4	1/4	1	138	35
Corbitt AA-5—1919–20	3	1/4	1 1/2	1/4	....	13	1 1/4	8	1 1/4	36	2	V	69 1/4	3	1/4	1	69 1/4	3	1/4	1	160	38
Corbitt A-3½—1917–20	3	1/4	1 1/4	1/4	....	13	2	14	2	36	1 1/4	V	64	2 1/2	1/4	1	64	2 1/2	1/4	1	160	35
Cyclone A-3000	3	1/4	1	1	V	16	2	16	2	32 1/2	1 1/4	F	21 1/4	2 1/2	1/4	4	19 3/4	2 1/4	1/4	4	113	34
Dart S-1½—1920–21	3	1/4	1 1/4	1 1/4	H	11	2	8	1 3/4	36	1	F	19	1 3/4	1/4	4	19	1 3/4	1/4	4	112	34
Dart M-2½—1920–21	4	1/4	1 1/4	1 1/4	H	11	2	14	1 1/4	35	2	F	10	2 1/2	1/4	2	19	3 1/2	1/4	4	124	34
Dart W-3½—1920–21	4	1/4	1 1/2	2	H	11	2	12	1 1/2	36	2	F	28	2 3/4	1/4	4	28	2 3/4	1/4	4	144	38
Day-Elder AS-1	3	1/4	1 1/4	1 1/2	V	9	2	9 1/2	2	40	5/8	V	19	2	1/4	4	19	2	1/4	4	108	35
Day-Elder B-1½	3	1/4	1 1/4	1 1/2	V	9	2	9 1/2	2	40	5/8	V	19	2	1/4	4	19	2	1/4	4	120	35
Day-Elder D-2	3	1/4	1 1/4	1 1/2	V	4	1 1/2	9	1 3/8	35	5/8	V	45	2	1/4	2	45	2	1/4	2	125	35
Day-Elder C-2½	3	1/4	1 1/4	1 1/2	V	10 1/2	2	12	1 3/8	36 3/4	2	F	52	2 1/4	1/4	2	52	2 1/4	1/4	2	123	35
Day-Elder F-3½	3	1/4	1 1/2	1 3/4	V	6 3/4	1 3/4	12	1 1/4	35 1/4	1 1/2	F	56 1/2	2 1/2	1/4	2	56 1/2	2 1/2	1/4	2	148	35
Day-Elder E-5	3	1/4	1 1/2	1 3/4	V	12 1/2	2	10	1 3/8	38 1/2	1 1/2	F	69	3	1/4	2	69	3	1/4	2	155	37
Dearborn BW-2—1915–17–19–20	3	....	1	....	....	8 3/4	2	6	1 3/4	37	1	F	18	2 1/2	1/4	2	18	1 1/2	1/4	2	130	32
Dearborn F-1½—1915–17–19–20	3	....	1	....	....	12	2	8	1 3/4	37	1	F	16 1/2	2 1/2	1/4	2	16 1/2	1 1/2	1/4	2	96 1/2	34
Dearborn C-1—1915–17–19–20	3	....	3/4	....	....	....	....	....	....	38	2	F	38	2	1/4	1	38	2	1/4	1	107	32
Defiance B-1½—1918–19–20	3	1/4	1	1	V	10	2	8	2	40 3/4	1 1/4	F	45	2 1/2	1/4	1	43 1/4	2 1/4	1/4	1	116	34
Defiance C-2—1918–19–20	3	1/4	1	1	V	10	2	8	2	40 3/4	1 1/4	F	54 1/4	2 1/2	1/4	1	52 1/2	2 1/4	1/4	1	116	34
Defiance D—1920–21	3	1/4	1	1	V	10	2	8 1/2	1 1/4	40 3/4	1 1/4	F	45	2 1/2	1/4	1	43 1/4	2 1/4	1/4	1	120	34
Defiance E—1920–21	3	1/4	1	1	V	10	2	8 1/2	1 1/4	40 3/4	1 1/4	F	54 1/4	2 1/2	1/4	1	52 1/2	2 1/4	1/4	1	120	34
Denby 31-¾—1922	3	1/4	1	1	....	6	2 3/4	19	2 3/8	38 5/8	1 1/4	F	49	2 1/2	1/4	2	47 1/2	2 1/4	1/4	2	97 1/8	34
Denby 33-1½—1922	3	1/4	1	1	....	9	2	12	2	41 1/4	3/4	V	8 1/2	4	1/4	2	46 1/2	1 1/2	1/4	2	120	33 1/4
Denby 34—1922	3	1/4	1	1	....	9	2	12	2	41 1/4	3/4	V	53 1/4	3	1/4	2	50 1/4	2	1/4	2	127	34
Denby 35-2½—1922	3	1/4	1 1/4	1 1/4	....	6 1/4	2	14 1/4	1 3/4	38 1/2	1 1/4	F	8 1/2	4	1/4	2	47 1/4	2	1/4	2	143 3/4	33 1/4
Denby 27-4—1922	3	1/4	1 1/4	1 1/4	....	13	1 3/4	16 1/4	1 1/2	38 1/2	1 1/2	F	8 1/2	4	1/4	2	58	2 1/2	1/4	2	140	34
Denby 210-5—1922	3	1/4	1 1/4	1 1/4	....	13	1 3/4	16 1/4	1 1/2	38 1/2	1 1/2	F	8 1/2	4	1/4	2	89	2 1/4	1/4	2	140	34
Dependable Dispatch A-1¼ 1921–22	4	1/4	1	1/4	V	14	2 1/4	15	1 1/4	37 1/2	2	F	53 1/4	2 1/4	1/4	1	38 1/4	2 1/4	1/4	1	108	33 1/4
Dependable C-2—1920–21–22	4	1/4	1	1/4	V	14	2 1/4	15	1 1/4	37 1/2	2	F	53 1/2	2 1/2	1/4	1	38 1/2	2 1/2	1/4	1	121	33
Dependable D-2½ 1920–21–22	4	1/4	1 1/4	1/4	V	10	2 1/4	11 1/2	1 1/4	37 1/2	2	F	53 1/2	2 1/2	1/4	1	38 1/2	2 1/2	1/4	1	140	33
Dependable E-3—1920–21–22	4	1/4	1 1/4	1/4	V	10	2 1/4	11 1/2	1 1/4	37 1/2	2	F	63	2 1/2	1/4	1	49	2 1/2	1/4	1	152	33
Dependable G-3½ 1921–22	4	1/4	1 1/4	1/4	V	13	2	13	1 1/4	37 1/2	2	F	63	2 1/2	1/4	1	49	2 1/2	1/4	1	170	33
Diamond T-O-3—1	3	1/4	1	1 1/4	V	9	1 1/4	6	1 1/4	35	2	F	48	2 1/2	1/4	2	33	2 1/2	1/4	2	100	34
Diamond T-FS&T-1½	3	1/4	1	1 1/4	V	9	1 1/4	6	1 1/4	35	2	F	11 1/2	3 1/4	1/4	4	11 1/2	3 1/2	1/4	4	Opt	34
Diamond T-U-2	3	1/4	1 1/4	1 1/4	V	9	1 1/4	6	1 1/4	35	2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	Opt	34
Diamond TK-3½	3	1/4	1 1/4	1 1/2	V	10	1 1/2	10	1 1/2	35	2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	Opt	37
Diamond T-EL-5	3	1/4	1 1/4	1 1/2	V	10	1 1/2	10	1 1/2	35	2	F	18	4	1/4	4	17 1/4	4	1/4	4	Opt	37
Diamond T-S-5	3	1/4	1 1/2	1 3/4	V	9	2	21	2	40 3/4	2	F	18	4	1/4	4	17 1/4	4	1/4	4	Opt	37
Diehl A	3	....	1	1	....	....	....	....	....	....	....	....	28	2	1/4	2	27	2	1/4	2	90	....
Doane 2½—1917–18–19–20	3	1/4	1 1/4	1/4	H	9	1 1/4	12	1 1/4	32	1 1/2	F	35	3	1/4	2	18	3 1/2	1/4	4	126	53
Doane 3½—1920	3	1/4	1 1/4	1/4	H	12	1 1/4	15	1 1/2	38 3/8	1 1/2	F	35	3	1/4	2	18	3 1/2	1/4	4	156	58
Doane 6—1917–18–19–20	3	1/4	1 1/2	1/4	H	15	1 1/4	17 1/2	1 1/4	43	1 1/2	F	38	3	1/4	2	24	4	1/4	4	168	64
Dodge Brothers-½	3	1/4	1 1/8	1/4	....	7	1 1/2	7 1/4	1 1/4	31	1	R	19 1/4	2 1/4	1/4	2	14 3/8	1 3/4	1/4	2	47 3/8	38
D-Olt	3	1/4	1	1/4	H	18	2	18	2	36	1	F	54	3	1/4	2	42	3	1/4	2	240	34
Dorris K-4-2¼—1918–20	3	1/4	1 1/4	1 1/4	V	2 1/4	1 1/2	6 1/4	1 1/4	42 7/8	2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	142 3/4	34
Dorris K7-3½—1919–20–21	3	1/4	1 1/4	1 1/4	V	2 1/4	1 1/2	6 1/4	1 1/4	42 7/8	2	F	15 3/4	3 3/4	1/4	4	15 3/4	3 3/4	1/4	4	178 1/2	36
Double Drive B3	4	1/4	1 1/4	1 1/4	....	....	....	....	....	....	....	....	29	2 1/4	1/4	1	29	2 1/4	1/4	1	124	36
Douglas GW-1½	3	....	1 1/4	1/4	....	....	....	....	....	....	....	....	45	2 1/2	1/4	2	44	2 1/4	1/4	2	118	31
Douglas G-1½	3	....	1 1/4	1/4	....	....	....	....	....	....	....	....	46	2 1/2	1/4	2	44	2 1/4	1/4	2	118	31
Douglas H-2	3	....	1 1/4	1/4	....	....	....	....	....	....	....	....	55	2 1/2	1/4	2	52	2 1/4	1/4	2	118	31
Douglas HW-2	3	....	1 1/4	1/4	....	....	....	....	....	....	....	....	54	2 1/2	1/4	2	42	2 1/4	1/4	2	118	31
Douglas I-3	3	....	1 1/4	1/4	....	....	....	....	....	....	....	....	58	2 1/2	1/4	2	44	2 1/4	1/4	2	132	31
Drake T-60	3	1/4	1 1/4	1 1/2	V	9	1 1/2	8	1 1/4	32	1 1/4	F	42 1/4	2 1/2	1/4	1	37	2 1/2	1/4	1	106	34
Duplex E-3½	3	1/4	1 1/4	1	....	....	....	....	....	....	....	....	9 1/2	2 1/2	1/4	2	5 1/2	2 1/2	1/4	2	126	39 1/8
Duplex A	....	....	1 1/4	1 1/2	....	....	....	....	....	....	....	....	....	2	....	4	....	2	....	4	121	34
Duty 2—1921	3	1/4	1 1/2	1 1/4	V	7	2 1/4	18	2	38	1	F	45	2 1/2	1/4	1	40	1 3/4	1/4	1	123	44
Eagle 100-2	4	1/4	1 1/4	1	....	14	2	16	1 1/4	33 3/8	2	....	49 1/2	3	1/4	1	46	2	1/4	1	Opt	36
Earl 40	3	1/4	....	1	H	5	2	5	2	34 1/2	1	F	40 3/4	2	1/4	2	21 1/2	2	1/4	1	....	46
Eugol 752-1	3	1/4	1 3/4	1/8	V	8	1 3/4	15 1/2	1 1/4	32 3/4	1 1/2	F	11	2 1/2	1/4	2	11	2 1/2	1/4	2	102	30
Fageol 1½—2—1920–22	3	1/4	1 1/4	1 1/2	V	15 1/2	1 1/4	11 1/2	1 1/4	34	5/8	V	19 1/4	1 3/4	1/4	2	19 1/4	1 1/4	1/4	2	120	30
Fageol 2½—3—1917–22	3	1/4	1 1/4	1 1/4	V	10	1 1/4	14 3/4	1 1/4	34 3/4	1 1/2	F	13 1/4	3 1/2	1/4	2	13 1/4	3 1/4	1/4	2	141	34
Fageol 3½—4—1917–22	3	1/4	1 5/8	2	V	9	1 1/2	17 1/2	1 1/2	40 1/2	1 1/2	F	15 1/2	3 3/4	1/4	2	15 1/2	3 3/4	1/4	2	159 1/2	37 1/4
Fageol 5-6—1917–22	3	1/4	1 5/8	2	V	9	1 1/2	17 1/2	1 1/2	40 1/2	1 1/2	F	18	4	1/4	2	18	4	1/4	2	161 1/4	37 1/4
Fargo O17, P18-2, P19-2, P20-2	3	1/4	....	1 1/8	....	10	2	10	2	42	5/8	V	52	3	1/4	2	50 1/2	2	1/4	2	132	33
Fargo R—1921	3	1/4	....	1 1/8	....	10	2	10	2	42	5/8	V	52	3	1/4	2	50 1/2	2	1/4	2	132	33
Federal 8D-1-1½	4	1/4	1	1 1/4	V	15	1 1/2	7	1 1/4	35 5/8	1	F	10 1/4	3	1/4	4	10 1/4	3	1/4	4	112	34
Federal TE-1½-2	3	1/4	1 1/4	1 1/2	V	7	1 1/4	6	1 1/2	32 1/2	1	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	118	34
Federal UE-2-2½	3	1/4	1 1/4	1 1/2	V	7	1 1/4	6	1 1/2	32 1/2	1	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	134	34
Federal WE-3½-4	3	1/4	1 1/4	1 1/2	V	12 1/2	1 1/4	9	1 3/4	39	1 1/2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	154	38
Federal XD-2-5-6	4	1/4	1 1/4	2	V	10	2 1/8	14 1/4	1 1/8	40 7/8	1 3/4	F	17 1/4	4	1/4	4	17 1/4	4	1/4	4	154	38
Federal Light Duty	3	1/4	1 1/4	1 1/2	V	7	1 1/4	6	1 1/2	32 1/2	1	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	86	34
Federal Heavy Duty	3	1/4	1 1/4	1 1/2	V	12 1/2	1 1/4	9	1 3/4	39	1 1/2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	82	38
Ford T-1	3	1/4	1.06	1 1/4	H	4	2	....	1 3/4	27	1 1/2	F	23 3/8	1 1/8	1/4	1	12	1 5/8	1/4	2	60	23
Front Drive C1½	4	1/4	1	1 1/2	....	....	....	....	....	....	....	....	13	3	1/4	2	15	3	1/4	2	124	36
F.W.D. B-3	3	1/4	1 1/4	1/4	....	4	2	5	1 1/2	40	1 7/8	F	27	3 1/2	1/4	1	43	2 3/4	1/4	2	136	36
Garford 15-¾-1921	4	1/4	1	....	....	....	....	....	....	34	1 1/2	F	11	2 1/2	1/4	4	11	2 1/2	1/4	4	96	34
Garford 25-1¼—1920	3	1/4	1 1/4	....	H	....	....	....	....	37 1/4	1	....	11 3/4	3 1/4	1/4	4	11 3/4	3 1/4	1/4	4	108	34
Garford 70H-2—1920	4	1/4	1 1/4	....	V	....	....	....	....	34 1/4	2	F	13 1/4	3 1/2	1/4	4	13 1/4	3 1/2	1/4	4	121	34
Garford 77D-3½—1920	4	1/4	1 1/4	....	V	....	....	....	....	39	2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	144	36
Garford 68D-5-1921	4	1/4	1 1/2	....	V	....	....	....	....	41 1/4	2	F	17 3/4	4	1/4	4	17 3/4	4	1/4	4	150	36
Garford 150-A-7½-1921	4	1/4	1 1/2	....	V	....	....	....	....	41 1/4	2	F	10 1/2	4	1/4	2	21 5/8	4	1/4	4	150	36
Gersix K-2½—1920	4	1/4	1 1/4	1 1/4	H	12	2	14	1 1/4	36	2	....	20	2 1/2	1/4	2	47	2 1/4	1/4	2	131	34
Gersix M-1½—1920	4	1/4	1 1/4	1 1/4	H	12	2	14	1 1/4	36	2	....	46	2	1/4	2	46	2	1/4	2	114	32

Replacement Table—Continued

Name, Model and Tonnage	ENGINE											BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Gersix L-3½	4	¼	1¼	1¼	H	13½	2	16	1¼	36	2	....	56	2½	¼	2	56	2½	¼	2	144	36½
Giant 15A-1½	3	⅞	1	....	....	....	....	....	....	....	....	....	19	2	⅞	4	19	2	⅞	4	116½	32
Giant 16-2½	3	⅞	1¼	....	....	....	....	....	....	....	....	....	45½	2	⅞	2	45½	2	⅞	2	140½	33
Giant 17-3½	3	⅞	1½	....	....	....	....	....	....	....	....	....	56½	2½	¼	2	46½	2½	¼	2	183½	36
G.M.C. K-15	4	⅞	1¼	1⅛	V	8¾	1½	8	1½	35⅝	⅞	V	49⅝	2⅛	⅞	2	47	2⅛	⅞	2	89	34
G.M.C. K-16	4	⅞	1¼	1⅛	V	8¾	1½	8	1½	35⅝	⅞	V	49⅝	2⅛	⅞	2	47	2⅛	⅞	2	89	34
G.M.C. K-41	4	¼	1¼	1⅛	V	10⅛	1¾	9½	1¾	37⅞	⅞	V	13	3½	¼	4	13	3½	¼	4	Opt	33
G.M.C. K-71	4	¼	1¼	1⅛	V	11¾	1¾	9½	1¾	37⅞	⅞	V	15½	3¾	¼	4	15½	3¾	¼	4	Opt	38
G.M.C. K-101	4	¼	1¼	1⅛	V	11¾	1¾	9½	1¾	37⅞	⅞	V	17¾	4	¼	4	17¾	4	¼	4	Opt	38
Gramm-Pioneer 10 Speed—1921	3	⅞	1	1½	V	12	2¼	14½	2¼	29	1	F	48	2	⅞	2	26	2	⅞	1	97	30⅛
Gramm-Pioneer 15-1½—1921	3	⅞	1	1½	V	10¼	2	6	2	39	1¼	F	48½	2	⅞	2	45⅞	1½	⅞	2	120	32
Gramm-Pioneer 65-1½—1921	3	⅞	1	1½	V	10¼	2	6	2	39	1¼	F	19¾	1¾	⅞	4	19¾	1¾	⅞	4	120	32
Gramm-Pioneer 20-2—1921	3	⅞	1¼	1½	V	4½	1½	12	1½	32	2	F	45	2	⅞	4	45	2	⅞	4	126	32
Gramm-Pioneer 30-3—1922	3	¼	1¼	1½	V	11	1½	9	1½	33¾	2	F	22¾	2¼	¼	4	22¾	2¼	¼	4	129¾	36
Gramm-Pioneer 75P-3½—1922	3	¼	1¼	1½	V	....	....	....	....	....	....	....	22¾	2¼	¼	4	22¾	2¼	¼	4	129¾	36
Gramm-Pioneer 40-4—1922	3	¼	1¼	1½	V	11	1½	9	1½	33¾	2	F	28¾	2¾	¼	4	28¾	2¾	¼	4	144	36
Gramm-Pioneer 50-5-6—1922	3	¼	1½	1¾	V	23¼	2	13¾	1⅞	40¾	2	F	32 ‡‡	2¾	¼	4	32 ‡‡	2¾	¼	4	162	36
G. W. W.	3	¼	1¼	1¾	V	12	1¾	11	1¾	37	2	F	49	2½	¼	2	47	1½	⅜	2	89	32
Hall 2-Worm-2½	3	⅞	....	....	....	8	1¼	12½	1¼	32	1¼	F	11½	3	¼	4	11½	3	¼	4	144	38
Hall 3½-Worm	3	⅞	....	....	....	12½	1¾	15½	1¼	38⅛	1½	F	15	3¾	¼	4	15	3¾	¼	4	180	39
Hall 5-Worm	3	⅞	....	....	....	12½	1¾	15½	1¼	38⅛	1½	F	18	4	¼	4	18	4	¼	4	144	39
Hall 7-Chain	3	⅞	....	....	....	12½	1¾	15½	1¼	38⅛	1½	F	18	4	¼	4	18	4	¼	4	144	39
Harvey WOA-2	4	¼	1¼	2	V	11	2	14	1¼	35⅝	2	F	45	2	¼	2	45	2	¼	2	136	32
Harvey WFA-2½	4	¼	1¼	2	V	11	2	14	1¼	35⅝	2	F	50	2¼	¼	2	50	2¼	¼	2	136	32
Harvey WHA-3½	4	¼	1¼	2	V	12	2	14	1¼	35⅝	2	F	56½	2½	¼	2	56½	2½	¼	2	144	35
Headrickson N-2½	3	¼	1½	⅞	....	....	....	....	....	....	....	....	12	3½	⅞	4	12	3½	⅞	4	Opt	32⅛
Hendrickson M-3½	3	¼	1¼	⅞	....	....	....	....	....	....	....	....	16	3¾	⅞	4	16	3¾	⅞	4	Opt	36
Hendrickson K-5	3	¼	1½	⅞	....	....	....	....	....	....	....	....	18	4	⅞	4	18	4	⅞	4	Opt	38
Highway Knight A	3	¼	1 ‡‡	1 ‡‡	....	14	2¾	10	2¾	53	⅝	V	57	2½	¼	2	57	2½	¼	2	147	38
Highway Knight B-5	3	¼	1 ‡‡	1 ‡‡	....	14	2¾	10	2¾	53	⅝	V	69	3	¼	2	69	3	¼	2	147	38
Higrade A18-1—1918–19	3	⅞	1	1	V	9	2	7	2	32	½	R	12	1½	¼	2	12	1½	¼	2	85	32
Higrade B20-1½—1919–20	3	⅞	1⅛	1⅛	V	9	2	7	2	32	½	R	18	2	¼	2	18	2	¼	2	100	32
Hurlburt A1½-2	3	....	1¼	1	....	....	....	....	....	....	....	....	22	2	¼	2	22	2	¼	2	132	35⅛
Hurlburt B2½	3	⅞	1¼	1	....	....	....	....	....	....	....	....	24	2½	¼	2	23	2½	¼	2	154	34
Hurlburt C3½-4	3	¼	1½	1¼	....	....	....	....	....	....	....	....	26	3	¼	2	25	3	¼	2	144½	34
Hurlburt D5-5½	3	¼	1½	1¼	....	....	....	....	....	....	....	....	28	3	¼	2	27	3	¼	2	144½	34
Huron-Erie 1½	4	....	1	1½	....	....	....	....	....	....	....	....	15	3	¼	2	50	2	⅞	2	121	33
Huron-Michigan 2½	4	....	1¼	1 ‡‡	....	....	....	....	....	....	....	....	15	3	¼	2	50	2½	⅞	2	145	33
Indiana 12-1½—1921	3	¼	1	....	....	17	1¼	14	1¼	38½	1	....	17½	2	⅞	4	17½	2	⅞	4	108	32
Indiana 20-2—1921	3	¼	1¼	....	....	6	1¼	13	1¼	26⅝	1½	....	44	2	¼	2	44	2	¼	2	126	33
Indiana 25-2½—1921	3	¼	1¼	....	....	6	1¼	13	1¼	26⅝	1½	....	51	2¼	¼	2	51	2¼	¼	2	138	33
Indiana 35-3½—1921	3	¼	1¼	....	....	6	1¼	13	1¼	26⅝	1½	....	56	2½	¼	2	56	2½	¼	2	144	34½
Indiana 51-5—1921	3	¼	1½	....	....	10	1½	17½	1½	26⅝	1½	....	68	3	¼	2	68	3	¼	2	156	37½
International S-1500 lbs.–Speed Truck '21	3	¼	1¼	1¼	V	9¾	2¼	17¾	2¼	30¼	1	F	38	2	⅞	2	36	2	⅞	2	90	34
International 21-2000 lbs.—1916–21	3	¼	1¼	1¾	V	6	1½	3½	1⅛	38⅛	1⅛	F	43¾	2¼	⅞	2	43¾	2¼	⅞	2	75 ‡‡	34
International 31-3000 lbs.—1916–21	3	¼	1¼	1¾	V	6	1½	3½	1⅛	38⅛	1⅛	F	43¾	2¼	⅞	2	43¾	2¼	⅞	2	106½	34
International 41-4000 lbs.—1918–21	3	¼	1¼	1¾	V	6	1½	3½	1⅛	38⅛	1⅛	F	50⅝	2¼	⅞	2	50⅝	2¼	⅞	2	111 ‡	32¼
International 61-6000 lbs.—1918–21	4	¼	1¼	1¾	V	9	2¼	14½	2	....	....	....	50⅝	2¼	⅞	2	50⅝	2¼	⅞	2	118 ‡‡	34
International 101-10,000 lbs.—1920-21	4	¼	1¼	1¾	V	9	2¼	14½	2	....	....	....	73 ‡	2½	⅞	2	73 ‡	2½	⅞	2	147⅝	34
Jackson B 3½	3	⅞	1¼	1½	V	11	....	....	....	32½	1¼	F	58½	3½	¼	2	....	....	....	....	150	36
Kalamazoo G-2–1½	3	¼	1 ‡‡	1 ‡‡	....	15½	1½	8	1½	40	1½	F	50	2½	⅞	1	....	2½	⅞	1	120	32½
Kalamazoo H-2½	3	¼	2 ‡‡	1 ‡‡	....	20	1¾	19½	1½	42	2	F	90	2½	¼	1	48	2½	¼	1	144	33
Kalamazoo K-3½	3	¼	2 ‡‡	1 ‡‡	....	20	1¾	19½	1½	42	2	F	60	2½	¼	1	60	2½	¼	1	152	36
Kalamazoo K5-5	3	¼	2 ‡‡	1 ‡‡	....	20	1⅞	19½	1½	42	2	F	68	3	¼	2	68	3	¼	2	152	36
Kearns H-1	3	⅞	1	⅞	H	16	2	16	2	33	1	F	42	2	⅞	1	21	2	⅞	2	90	34
Kearns N-2	3	⅞	1	⅞	H	18	2	18	2	33	1	F	45	2½	⅞	1	22	2¼	⅞	2	120	34
Kelly-Springfield K31 1½	4	¼	1	⅞	V	7	1½	13	1½	54½	1	V	16¾	1⅞	⅞	4	16¾	1⅞	⅞	4	138	34
Kelly-Springfield K34 1½	4	¼	1	⅞	V	7	1½	13	1½	54½	1	V	42⅝	2	¼	2	42⅝	2	¼	2	138	34
Kelly-Springfield K35 2½	4	¼	1	⅞	V	7	1½	13	1½	55½	1	V	16¾	1⅞	⅞	4	16¾	1⅞	⅞	4	138	34
Kelly-Springfield K38 2½	4	¼	1	⅞	V	7	1½	13	1½	55½	1	V	48⅞	2¼	¼	2	48⅞	2¼	¼	2	138	34
Kelly-Springfield K40 3½	4	¼	1¼	⅞	V	5 ‡	1⅝	24	1½	63⅝	1	V	21	2⅞	⅞	4	21	2⅞	⅞	4	145	38
Kelly-Springfield K41 3½	4	¼	1¼	⅞	V	5 ‡	1⅝	24	1½	60⅝	1	V	3 ‡	4½	¼	12	58	2½	⅞	2	144	36
Kelly-Springfield K42 3½	4	¼	1¼	⅞	V	5 ‡	1⅝	24	1½	60⅝	1	V	27½	2¾	¼	4	27½	2¾	¼	4	144	36
Kelly-Springfield K 50-5	4	¼	1¼	⅞	V	5 ‡	1⅝	24	1½	63⅝	1	V	21	2⅞	⅞	4	21	2⅞	⅞	4	145	38
Kelly-Springfield K60-6	4	¼	1¼	⅞	V	5 ‡	1⅝	24	1½	63⅝	1	V	21	2⅞	⅞	4	21	2⅞	⅞	4	145	38
Keystone 40-2—1919–20	3	¼	1	⅞	V	8	2⅛	8	2⅛	38	1	F	50½	3	⅞	1	46¾	2	⅞	1	124	33
Kimball AB-2	3	¼	1¼	1¾	V	6	1½	....	....	39	2	F	45	2	¼	2	45	2	¼	2	135	34
Kimball AC-2½	3	¼	1¼	1¾	V	6	1½	....	....	39	2	F	22½	2¼	¼	4	22½	2¼	¼	4	152	34
Kimball AK3	3	¼	1¼	1¾	V	6	1½	....	....	39	2	F	22½	2¼	¼	4	22½	2¼	¼	4	152	34
Kimball AE-4	3	¼	1½	1¾	V	9	1¾	....	....	42	2	F	56	2½	¼	2	56	2½	¼	2	171	36
Kimball AF-5	3	¼	1½	1¾	V	9	1¾	....	....	42	2	F	69	3	¼	2	69	3	¼	2	171	36
Kissel-1 Ton—1921	3	⅞	....	1¼	....	12¼	1¾	10	1½	46¾	2	F	11	3	¼	4	11	3	¼	4	101¼	34
Kissel-Utility 1½—1917–20	3	⅞	....	1¼	....	12¼	1¾	10	1½	46¾	2	F	19	2	⅞	4	19	2	⅞	4	120	34
Kissel-Freighter-2—1917–20	3	⅞	....	1¼	....	12¼	1¾	10	1½	49	2	F	14	3½	¼	4	14	3½	¼	4	144	34
Kissel-Heavy-Duty-3½—1917–20	3	⅞	....	1¼	....	13¾	1¾	10	1½	52¼	2	F	56	2½	⅞	2	56	2½	⅞	2	156	36
Kissel-Goliath-5—1919–20	3	⅞	....	1¼	....	....	....	....	....	55	2	F	56	2½	⅞	2	56	2½	⅞	2	168	36
Kleiber 1	3	⅞	1¼	1¾	....	13	1½	16	1¼	36	¾	....	12	3½	4	4	12	3½	¼	4	120	34
Kleiber 1½	3	⅞	1¼	1¾	....	13	1½	16	1¼	38	1¼	....	45	2	4	2	45	2	¼	2	132	34
Kleiber 2	3	⅞	1¼	1¾	....	13	1½	16	1¼	40	1¼	....	13½	3½	4	4	13½	3½	¼	4	144	34
Kleiber 2½	3	⅞	1¼	1¾	....	13	1½	16	1¼	40	1¼	....	52	2½	4	2	52	2½	¼	2	150	34
Kleiber 3½	3	⅞	1¼	1¾	....	13	1¾	16	1¼	40	1¼	....	16	3¾	4	4	16	3¾	¼	4	156	38
Kleiber 5	4	¼	1½	1¾	....	13	1¾	16	1¼	43	1¼	....	18	4	4	4	18	4	¼	4	168	38
Koehler D-1½	3	⅞	1	¼	V	9¼	2	12½	2	37½	1¼	....	40	1¾	⅜	2	40	1¾	⅜	2	113¼	34
Koehler M-2½	4	⅞	1¼	¼	V	5¼	1⅝	5¼	1¼	40¼	1¼	....	13	3½	¼	4	13	3½	¼	4	141¾	34
Koehler MCS-2½	4	⅞	1¼	¼	V	5¼	1⅝	5¼	1¼	40¼	1¼	....	13	3½	¼	4	13	3½	¼	4	129¾	34
Koehler F-3½	4	⅞	1¼	¼	V	9	1⅝	5¼	1¼	....	....	....	15½	3¾	¼	4	15½	3¾	¼	4	139½	34
Koehler MT 5–Tractor 5	4	⅞	1¼	¼	V	5¼	1⅝	5¼	1¼	40¼	1¼	....	13	3½	¼	4	13	3½	¼	4	....	34
Lange B	3	⅞	1	1⅛	V	3½	2¼	11	2	36½	¾	F	30	2	¼	2	18	3	¼	4	114	37
Lange E-2½	3	¼	1	1⅛	V	9	1½	15½	1½	42	1½	F	18	3½	¼	4	18	3½	¼	4	138	33
Larrabee U-1½—1919–20	3	⅞	1	....	V	9	2	9	2	38	⅝	V	48	2	¼	2	48	2	¼	2	108	34
Larrabee A,B 18-19 & L-'20-3½	3	⅞	1¼	....	V	9	1½	6	1¼	36	1½	....	60	2½	¼	2	60	2½	¼	2	168	36
Larrabee C,D'18-19 & K'20-2½	3	⅞	1¼	....	V	8½	2	17½	2	44	2	F	54	2¼	¼	2	54	2¼	¼	2	150	36
Larrabee W-5—1920	3	⅞	1½	....	V	6	1¼	6	1¼	36	1¼	F	72	3	¼	2	72	3	¼	2	152	36
Larrabee T-–1918–19	3	⅞	1¼	....	V	9	1½	6	1¼	36	1½	F	72	3	¼	2	72	3	¼	2	157	36
Luedinghaus K2—1919–20	3	¼	1¼	1 ‡‡	....	9	1¼	5	1¼	.....	1½	F	53.4	2½	⅛	2	38½	2½	¼	2	120	34
Luedinghaus K2-LS—1920	3	¼	1¼	1 ‡‡	....	9	1¼	5	1¼	.....	1½	F	53.4	2½	¼	2	38½	2½	¼	2	145½	34
Luverne BBL-2	3	⅞	1¼	1¼	....	....	....	....	....	....	....	....	....	2½	¼	2	.....	2½	¼	2	108	34
Maccar L-1½—1915–20–21–22	3	⅞	1¼	1⅛	V	3¼	1½	10	1¼	30¾	¾	F	11⅛	3¼	¼	4	11⅛	3¼	¼	4	128½	34
Maccar H-2, 2½—1921–22	4	¼	1¼	1⅛	V	9½	1½	15½	1½	41½	1½	F	13 ‡	3½	¼	4	13 ‡	3½	¼	4	141½	34

Replacement Table—Continued

Name, Model and Tonnage	ENGINE											BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Macear HA 1921–22	4	1/4	1 1/16	1 5/8	V	11 1/4	1 1/2	17	1 1/2	41 1/2	1 1/2 *	F	13 3/16	3 1/2	1/4	4	13 3/16	3 1/2	1/4	4	143 5/8	34
Macear M3–1922	4	1/4	1 1/4	1 5/8	V	11 1/4	1 1/2	15 1/2	1 1/2	41 1/2	1 1/2	F	14 3/4	3 3/4	1/4	4	14 3/4	3 3/4	1/4	4	155 1/2	34
Macear G-5—1919–20–21–22	3	1/4	1 1/2	1 7/8	V	10 1/2	2	20 1/2	2	40 3/4	2	F	18	4	1/4	4	18	4	1/4	4	166 3/8	37 1/8
MacDonald A–7 1/2	4	1/4	1 1/4	....	V	12	2	21	1 1/4	35	2	F	70	3	1/4	1	34	3	1/4	1	.....	.....
Mack AB1 1/2, 2, 2 1/2-Ton-Chain '16-20	4	1/4	1 1/4	1 1/2	V	9 1/2	1 1/2	4 3/4	1 1/2	33	1 1/2	F	12 1/4	4	1/4	2	16 1/2	2 1/2	1/4	4	Opt	33 1/4
Mack Dual Reduction, 1 1/2, 2, 2 1/2 -1921	4	1/4	1 1/4	1 1/2	V	9 1/2	1 1/2	4 3/4	1 1/2	33	1 1/2	F	18 1/4	3 1/2	1/4	4	12	6	1/4	2	Opt	33 1/4
Mack AB-Tractor 5 Ton—16–20	4	1/4	1 1/4	1 1/2	V	9 1/2	1 1/2	4 3/4	1 1/2	33	1 1/2	F	12 1/4	4	1/4	2	16 1/2	2 1/2	1/4	4	77	33 1/4
Mack AC 3 1/2 to 7 1/2 ton—'16–20	4	1/4	1 1/2	1 1/2	V	5 3/4	2 1/4	4 3/4	1 1/2	96	1	V	16 1/8	3	1/4	4	20 1/2	3 1/2	1/4	4	Opt	37 1/2
Mack AC Trac. 7 to 15 Ton—'16–20	4	1/4	1 1/2	1 1/2	V	5 3/4	2 1/4	4 3/4	1 1/2	96	1	V	16 1/8	3	1/4	4	20 1/2	3 1/2	1/4	4	87	37 1/2
Master JI-1 1/2—1919–20	4	1/4	1 1/4	2	H	13 1/2	2	12 1/2	1 1/4	30 1/2	1	F	74 1/2	2 1/2	1/8	1	74 1/2	2 1/4	1/4	1	117 3/4	34 1/8
Master JW-1 1/2—1919–22	4	1/4	1 1/4	1 11/16	V	13 1/2	2	12 1/2	1 1/4	30 1/2	1	F	12	3 1/4	1/4	2	12	3 1/4	1/4	2	117 3/4	34 1/8
Master M-2 1/2—1916–20	4	1/4	1 1/4	1 11/16	V	13 1/2	2	12 1/2	1 1/4	33	1 1/4	F	74 1/2	2 1/2	1/8	1	74 1/2	2 1/4	1/4	1	117 3/8	34
Master O 2 1/2—1917–20	4	1/4	1 1/4	1 11/16	V	13 1/2	2	12 1/2	1 1/4	33	1 1/4	F	74 1/2	2 1/2	1/8	1	74 1/2	2 1/4	1/4	1	156 3/8	34
Master W-2 1/2—1916–22	4	1/4	1 1/4	1 11/16	V	13 1/2	2	12 1/2	1 1/4	31	1 1/4	F	13 1/4	3 1/2	1/4	2	13 1/4	3 1/2	1/4	2	117 3/8	34
Master WL 2 1/2—1917–22	4	1/4	1 1/4	1 11/16	V	13 1/2	2	12 1/2	1 1/4	31	1 1/4	F	13 1/4	3 1/2	1/4	2	13 1/4	3 1/2	1/4	2	156 3/8	34
Master D-2 1/2—1920–22	4	1/4	1 1/4	1 11/16	V	13 1/2	2	12 1/2	1 1/4	35	1 1/4	F	8 5/8	4 1/2	1/4	2	54 1/4	3	1/4	2	117 3/8	34
Master DL-2 1/2—1920–22	4	1/4	1 1/4	1 11/16	V	13 1/2	2	12 1/2	1 1/4	35	1 1/4	F	8 5/8	4 1/2	1/8	2	54 1/4	3	1/4	2	156 3/8	34
Master T-6 Tractor—1917–22	4	1/4	1 1/4	1 11/16	V	13 1/2	2	12 1/2	1 1/4	33	1 1/4	F	74 1/2	2 1/2	1/8	1	74 1/2	2 1/4	1/4	1	72 1/8	34
Master A-3 1/2—1918–22	4	1/4	1 1/2	1 11/16	V	13 1/2	2	15	1 1/4	35	2	F	16	3 3/4	1/4	2	16	3 3/4	1/4	2	147 3/4	38 1/8
Master AL-3 1/2—1918–22	4	1/4	1 1/2	1 11/16	V	13 1/2	2	15	1 1/4	35	2	F	16	3 3/4	1/4	2	16	3 3/4	1/4	2	183 3/4	38 1/8
Master E-3 1/2—1920–22	4	1/4	1 1/2	1 11/16	V	13 1/2	2	15	1 1/4	35	2	F	11	6	1/4	2	25	4	1/4	4	147 3/4	38 1/8
Master EL-3 1/2—1920–22	4	1/4	1 1/2	1 11/16	V	13 1/2	2	15	1 1/4	35	2	F	11	6	1/4	2	25	4	1/4	4	183 3/4	38 1/8
Master-B 5—1919–22	4	1/4	1 1/2	1 1/2	V	13 1/2	2	15	1 1/2	37	2	F	18	4	1/4	2	18	4	1/4	2	162 7/8	39
Master BL-5—1919–22	4	1/4	1 1/2	1 1/2	V	13 1/2	2	15	1 1/2	37	2	F	18	4	1/4	2	18	4	1/4	2	186 7/8	39
Master F-5—1920–22	4	1/4	1 1/2	1 11/16	V	13 1/2	2	15	1 1/2	37	2	F	11	6	1/4	2	25	4	1/4	4	162 7/8	39
Master FL-5—1920–22	4	1/4	1 1/2	1 7/16	V	13 1/2	2	15	1 1/2	37	2	F	11	6	1/4	2	25	4	1/4	4	186 7/8	39
Master DT-6 Tractor—1921–22	4	1/4	1 1/4	2	H	13 1/2	2	12 1/2	1 1/4	35	1 1/4	F	8 5/8	4 1/2	1/4	2	54 1/4	3	1/4	2	72 1/2	42
Maxwell 1 1/2—1917–20	3	1/4	1	1	V	6 1/4	2 1/8	7 3/4	2 1/8	44 1/2	1 1/2	....	16	1 3/4	1/4	4	16	1 3/4	1/4	4	102	36
Menominee HT-1—1918–20	3	1/4	1	1 1/2	....	.....	.....	.....	.....	.....	.....	....	12	3 1/4	1/4	8	.....	.....	.....	.....	104	32
Menominee H-1 1/2—1916–20	3	1/4	1 1/4	1 3/4	....	.....	.....	.....	.....	.....	.....	....	13 1/2	3 1/2	1/4	8	.....	.....	.....	.....	122	32
Menominee D-2—1915–20	3	1/4	1 1/4	1 3/4	....	.....	.....	.....	.....	.....	.....	....	13 1/2	3 1/2	1/4	8	.....	.....	.....	.....	146	32
Menominee G-3 1/2—1916–20	3	1/4	1 1/2	2	....	.....	.....	.....	.....	.....	.....	....	16	3 1/2	1/4	8	.....	.....	.....	.....	149	36
Menominee J-5—1917–20	3	1/4	1 1/2	2	....	.....	.....	.....	.....	.....	.....	....	18 1/2	4	1/4	8	.....	.....	.....	.....	149	33
Menominee Ht-1—1920-late	3	1/4	1	1 1/2	....	9 1/4	1 3/4	10 1/2	1 1/4	33 3/4	1 1/4	F	47 1/16	2 1/2	1/16	2	33 1/4	2 1/2	1/16	2	102 3/4	32
Menominee H-1—1920-late	3	1/4	1	1 3/4	....	9 1/4	1 3/4	10 1/2	1 1/4	33 3/4	1 1/4	F	47 1/16	2 1/2	1/16	2	33 1/4	2 1/2	1/16	2	124	32
Menominee D-2—1920-late	3	1/4	1 1/4	1 3/4	....	3	1 3/4	3	1 1/2	37 3/4	2	F	57 1/2	2 1/2	1/16	2	42 1/2	2 1/2	1/16	2	131 1/2	32
Menominee G-3 1/2—1920–late	3	1/4	1 1/4	1 3/4	....	3	1 3/4	3	1 1/2	37 3/4	2	F	57 1/2	2 1/2	1/16	2	42 1/2	2 1/2	1/16	2	149	36
Menominee J-5—1920 late	3	1/4	1 1/2	2	....	3	1 3/4	3	1 3/4	40 3/4	2	F	69 1/16	3 1/2	1/16	2	52	2 1/2	1/16	2	149	38
Moline 10	3	1/16	....	1 1/4	H	10 1/2	2 1/4	4 1/2	2 1/4	.....	2	F	21	2 1/2	1/16	2	20	2	1/16	2	108	32
Moreland 21B-1 1/2—1919–20–21	3	1/16	1 1/4	1 1/2	H	9	1 1/2	13	1 1/2	42	1 1/2	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	132	34
Moreland 21C-2 1/2—1919–20–21	3	1/16	1 1/4	1 1/2	H	9	1 1/2	13	1 1/2	42	1 1/2	F	12	3 1/4	1/4	4	12	3 1/4	1/4	4	132	34
Moreland 21H-4—1919–20–21	3	1/16	1 1/4	1 1/2	H	9	1 1/2	13	1 1/2	42	1 1/2	F	13 1/2	3 1/2	1/4	4	13 1/2	3 1/2	1/4	4	156	38
Moreland 21J-5—1919–20–21	3	1/4	1 1/2	1 3/4	H	9	2	19	2	42	2	F	16	3 3/4	1/4	4	16	3 3/4	1/4	4	168	38
Napoleon 9-1—1919–20	3	1/16	1	1/16	V	6	2 1/4	12	2	36	1	F	44	2	1/16	1	30	2 1/2	1/16	1	101	35 1/2
Napoleon 11-1 1/2—1919–20	3	1/16	1	1/16	V	6	2 1/4	12	2	36	1	F	49	2	1/16	1	30	2 1/2	1/16	1	101	35 1/2
Nash 2018-1-1 1/2—1919–20	4	1/4	1 1/4	1 1/4	....	3	1 1/2	7 3/4	1 1/4	36	1	F	49 1/8	2	1/16	2	20 1/16	2 1/2	1/16	1	104 1/2	36 1/2
Nash 3018-2-2 1/2—1919–20	4	1/4	1 1/4	1 1/4	....	3	1 1/2	.....	.....	44	1	F	50 5/8	3	1/16	2	20 1/16	2 1/2	1/16	1	118 1/4	31 1/2
Nash 4017-2-2 1/2—1919–20	3	1/4	1 1/4	1 1/4	....	7	1 1/2	.....	.....	44	2	F	49 1/4	2 1/2	1/4	4	25 1/16	2 1/2	1/4	1	117 1/8	38 1/2
Nelson & LeMoon G 2	4	1/4	1 1/4	1/16	....	.....	.....	.....	.....	.....	.....	....	12	3 1/4	1/4	2	12	3 1/4	1/4	2	Opt	.....
Nelson & LeMoon G 3	4	1/4	1 1/4	1/16	....	.....	.....	.....	.....	.....	.....	....	12	3 1/4	1/4	2	12	3 1/4	1/4	2	Opt	.....
Nelson & LeMoon G 4	4	1/4	1 1/4	1/16	....	.....	.....	.....	.....	.....	.....	....	16 1/2	3 3/4	1/4	2	16 1/2	3 3/4	1/4	2	Opt	.....
Nelson & LeMoon G 5	4	1/4	1 1/2	1/16	....	.....	.....	.....	.....	.....	.....	....	18	4	1/4	2	18	4	1/4	2	Opt	.....
Neteo DK-2	3	1/16	1 1/4	1 1/16	V	12	1 1/2	16	1 1/4	40 1/16	1 1/2	F	13 3/16	3 1/2	1/4	4	13 3/16	3 1/2	1/4	4	108 1/2	34 1/2
Neteo HL-2 1/2–3	3	1/16	1 1/2	1 1/16	V	13	1 1/2	16	1 1/4	41 1/4	1 1/2	F	13 3/16	3 1/2	1/4	4	13 3/16	3 1/2	1/4	4	195 1/2	34 1/2
Niles E-2	3	1/16	1 3/4	1 1/4	V	8	1 1/4	11	1 1/4	30	3/4	F	12	3 1/4	1/4	2	12	3 1/4	1/4	2	147	36
Noble B30-1 1/2—1918–20	4	1/16	1	1 1/16	....	16 1/2	1 3/4	7	1 7/8	34 3/4	1 7/8	....	43	2	1/4	2	43	2	1/4	2	136	34
Noble C40-2—1919–20	4	1/4	1 1/4	1 1/16	....	12	1 1/4	9	2	34 3/4	1 7/8	....	43	2	1/4	2	43	2	1/4	2	148	34
Noble D50-2 1/2—1919–20	4	1/4	1 1/4	1 1/16	....	12	1 1/4	9	2	34 1/4	1 7/8	....	51	2 1/4	1/4	2	51	2 1/4	1/4	2	172	34
Noble E70-3 1/2—1919–20	4	1/4	1 1/4	1 1/16	....	16	1 1/4	14 1/2	2	34 1/4	1 7/8	....	57	2 1/2	1/4	2	57	2 1/2	1/4	2	172	36
Northway B-2	3	1/16	1 1/16	1 3/4	V	5 1/4	2 1/4	13 7/8	1 1/4	46 11/16	5/8	V	50 1/2	2 1/4	1/4	2	50 1/2	2 1/4	1/4	2	133	33
Northway B-3	3	1/16	1 1/16	1 3/4	V	5 1/4	2 1/4	13 7/8	1 1/4	46 11/16	5/8	V	54	2 1/2	1/4	2	54	2 1/2	1/4	2	173	34 1/2
Norwalk 25E–1	3	1/16	1	1/16	V	9	2 1/4	19	2 1/4	29	3/4	F	16 1/2	2 1/4	1/16	2	16 1/2	1 1/2	1/16	2	100	36
Norwalk 35E–1 1/2	3	1/16	1	1/16	V	9	2 1/4	19	2 1/4	29	3/4	F	16 1/2	2 1/4	1/16	2	16 1/2	1 1/2	1/16	2	124	34
Norwalk 35E Spec.–1 1/2	3	1/16	1	1/16	V	11	2	18	1 1/2	36	2	F	19	2	1/4	2	19	2	1/4	2	124	34
Ogden A–1	3	1/16	1	1	V	12	2	6	2	44	3/4	V	11	2 1/2	1/4	4	11	2 1/2	1/4	4	108	33 1/2
Ogden D–1 1/2	3	1/16	1	1	H	13	2	12	2	44	3/4	V	10 31/32	3	1/4	4	10 31/32	3	1/4	4	120	33 1/2
Ogden E–2 1/2	3	1/16	1 1/4	2	H	10	1 1/16	14	1 1/16	30	1 1/4	F	.....	.....	1/4	.....	.....	.....	1/4	.....	144	33 1/2
Ogden F–3 1/2	3	1/4	1 3/4	2	H	11	1 1/2	16	1 1/2	36	1 1/2	F	15 5/8	3 3/4	1/4	4	10 3/8	3 3/4	1/4	4	168	33 1/2
Ogden G–5	3	1/4	1 1/2	3	....	9	2	18	2	40	2	F	11	6	1/4	2	25	4	1/4	4	168	33 1/2
O. K.–1 1/2—1920	4	1/4	1 1/4	1 11/16	V	12	2	13 1/2	1 1/4	36	2	F	53	2 1/2	1/16	2	38	2 1/2	1/16	2	117	34
O. K.–2 1/2—1920	4	1/4	1 1/4	1 11/16	V	12	2	13 1/2	1 1/4	36	2	F	62	2 1/2	1/16	2	48	2 1/2	1/16	2	121	35
O. K. 3 1/2—1920	4	1/4	1 1/4	1 11/16	V	12	2	13 1/2	1 1/4	38	2	F	62	2 1/2	1/16	2	48	2 1/2	1/16	2	133	34
Old Reliable A-1 1/2—1918–20-21	3	1/4	1 1/4	1 1/4	....	.....	.....	.....	.....	.....	.....	....	48	2 1/2	1/4	1	48	2 1/2	1/4	1	105	32
Old Reliable B-2 1/2—1918–20-21	3	1/4	1 1/4	1 1/4	....	.....	.....	.....	.....	.....	.....	....	54	2	1/4	1	54	2	1/4	1	144	32
Old Reliable C-3 1/2—1918–20-21	3	1/4	1 1/4	1 1/4	....	.....	.....	.....	.....	.....	.....	....	60	2 1/2	1/4	1	60	2 1/2	1/4	1	150	32
Old Reliable D-5—1918–20-21	3	1/4	1 1/2	1 1/2	....	.....	.....	.....	.....	.....	.....	....	72	3	1/4	1	72	3	1/4	1	156	34
Old Reliable K. L. M.–7—1918–20-21	3	1/4	1 1/2	1 1/2	....	.....	.....	.....	.....	.....	.....	....	54	3 1/2	1/4	1	60	4	1/4	1	158	36
Oldsmobile T-1—1921	3	1/16	1 1/4	1 3/8	V	5	1 1/4	11	1 1/4	32 3/8	....	V	42 1/4	2	1/16	1	41 1/16	2	1/16	1	92 3/8	34
Olympic 2 1/2	3	1/4	1 1/4	1 1/2	V	13	2	12	1 1/4	34	2	F	13 1/2	3 1/2	1/4	2	13 1/2	3	1/4	2	Opt	32 1/2
Packard EC	3	1/4	1 5/16	1 3/4	V	6 1/4	1 1/2	10 5/16	1 1/2	41 1/16	3/4	V	7 11/16	4 3/4	1/4	2	14	2	1/16	4	132	37 1/2
Packard ED	3	1/4	1 5/16	1 3/4	V	6 1/4	1 1/2	10 5/16	1 1/2	43 1/16	3/4	V	9 1/16	4 3/4	1/4	2	17	3	1/16	4	144	38
Packard EF	3	1/4	1 5/16	1 3/4	V	6 1/4	1 1/2	10 5/16	1 1/2	43 1/16	3/4	V	9 1/16	6 1/2	1/4	2	18 3/4	3 1/2	1/16	4	144	38
Packard EX	3	1/4	1 5/16	1 3/4	V	6 1/4	1 1/2	10 5/16	1 1/2	43 1/16	3/4	V	9 1/16	6 1/2	1/4	2	14	2	1/16	4	132	37 1/2
Paige 54-20-2 1/2	3	1/4	....	1 1/4	....	10 1/2	1 1/2	12	1 1/2	37 5/8	1 1/4	F	49 5/8	2 1/4	1/4	2	49 5/8	2 1/4	1/4	2	126	33
Paige 51-18-3 1/2	3	1/4	....	1 1/4	....	13	1 1/2	13	1 1/2	37 5/8	2	F	15 5/8	3 3/4	1/4	4	15 5/8	3 3/4	1/4	4	144	33
Paige 52-19-1 1/2	3	1/16	....	1 1/4	....	8	1 1/4	12	1 1/4	36	2	F	11 1/2	3 1/4	1/4	4	11 1/2	3 1/4	1/4	4	126	33
Parker G1-2 1/2–1921	3	1/4	1 1/4	1 1/2	V	19	1 3/4	16 1/2	1 1/2	38	2	F	10 3/4	5	1/4	2	19	2 1/2	1/4	4	127	33
Parker C22-1—1922	3	....	1	1 1/4	V	16	1 1/4	12 1/2	1 1/4	39	1 1/2	F	10 1/2	3	1/4	4	10 1/2	3	1/4	4	95	33
Parker J20-3 1/2—1920	3	1/4	1 1/4	1 1/2	V	19	1 3/4	16 1/2	1 1/2	38	2	F	10 3/4	5	1/4	2	19	3 1/2	1/4	4	139 1/2	37
Parker M20-5—1920	3	1/4	1 1/2	1 3/4	V	14	1 3/4	18	1 3/4	39 1/2	2	F	10 3/4	5	1/4	2	24 1/2	4	1/4	4	145	37
Patriot Revere-1—1922	3	1/16	1 1/16	5/8	H	8	2	9	2	39	1 1/4	F	40 1/2	1 3/4	1/16	1	40 1/2	1 3/4	1/16	1	93	46
Patriot Lincoln Special-2—1922	3	1/16	1 1/16	5/8	V	6	1 1/4	8	1 1/2	37	1 3/4	F	40 1/2	1 3/4	1/16	1	40 1/2	1 3/4	1/16	1	113	47 1/2
Patriot Washington Special-3—1922	3	1/4	1 1/16	5/8	V	11	1 1/2	10	2	39	2	F	58	2 1/2	1/4	1	43	2 1/2	1/4	1	150	47 1/2
Pierce Arrow-2-X-5	3	1/16	1 1/16	1 5/16	V	16 5/16	2 5/16	14 1/4	2 1/16	43 1/2	1 1/2	F	22 1/4	2 1/4	1/4	4	22 1/4	2 1/4	1/4	4	125 1/16	34 1/2
Pierce Arrow-3 1/2-W-2	3	1/16	1 1/16	1 7/16	V	11	2 5/16	15 1/2	2 1/16	43 1/2	1 1/2	F	9 11/16	6	1/4	2	18	4 3/4	1/4	4	133 1/4	38 1/2
Pierce Arrow-5-R-10	3	1/16	1 1/16	1 7/16	V	11	2 5/16	15 1/2	2 1/16	43 1/2	1 1/2	F	9 11/16	6	1/4	2	20 7/16	4 3/4	1/16	4	139 1/4	38 1/2
Pittsburgher 2 1/2—1919–20	3	1/16	1 1/4	1 1/4	V	6	1 1/2	12	1 1/4	37	1	F	52	2 1/4	1/4	2	52	2 1/4	1/4	2	136	33
Pioneer 59AA–1	3	1/16	1 1/4	1 1/2	V	13	2	12	2	35	1	F	14	1 3/4	1/16	4	14	1 3/4	1/16	4	102	30

Replacement Table—Continued

Name, Model and Tonnage	ENGINE												BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Rainier R-S-2	3	¼	1 1/16	¾	V	5	1½	13	1½	31½	1¼	F	44½	2	¼	1	44½	2	¼	1	.....	34
Rainier R6-1½	3	¼	1 1/16	¾	V	9¾	1½	14¾	1½	41	1½	F	19	2	¼	2	19	2	¼	2	113	34
Rainier R-19-1	3	¼	1 1/16	¾	V	8½	1½	14	1½	41	1½	F	19	2	¼	2	19	2	¼	2	100	34
Rainier R11-¾	3	¼	1 1/16	¾	V	9	1½	14½	1½	42	1½	F	11¼	3	¼	2	11¼	3	¼	2	90	34
Ranger TK-22-1½	3	¼	1 1/16	1½	H	11¾	1 1/16	10	1¼	33¾	1	F	11½	3¼	¼	2	11½	3¼	¼	2	106½	33
Reliance 10A-1½—1920–21	4	¼	1¼	⅝	V	10½	2	13½	1⅜	35	2	F	17	2	¼	4	17	2	¼	4	122	32
Reliance 20B-2½—1920–21	4	¼	1¼	⅝	V	10½	2	13½	1⅜	35	2	F	17	2	¼	4	17	2	¼	4	127	32
Reo F—1500-2500-lbs.	3	¼	1	1	V	5½	1	5½	1	39 1/16	⅞	F	43	2¼	¼	1	39⅝	2	¼	1	82	30
Republic 10-1-10E-1-1919–20–21	3	¼	1	....	V	12¼	2	6	2	40 1/16	1¼	F	21¼	2½	¼	4	19¾	2¼	¼	4	.....	34
Republic 11X-1½—1919–20–21	3	¼	1	....	V	12¼	2	6	2	40 1/16	1¼	F	25¼	2½	¼	4	24¼	2¼	¼	2	118	34
Republic 19-2½—1919–20–21	3	¼	1¼	....	V	8	1½	11¾	1¼	32 1/16	1¼	F	25¼	2½	¼	4	24¼	2¼	¼	2	121	34
Republic 20-3½—1919–20–21	3	¼	1¼	....	V	7¼	1⅜	5½	1¼	36¼	1½	F	55¾	3½	¼	2	30 11/16	4½	¼	1	146	37
Republic Rapid Transit-¾—1921	3	¼	1	....	V	12	2¼	18½	2¼	31 11/16	1	F	19	2	¼	4	18	2	¼	4	95	31
Riker B3, BB-4	4	¼	.....	.....	V	9¾	1⅜	8	1¼	49½	1¼	V	7¼	4½	¼	2	20	4	¼	4	150	38
Rowe CW-1½—1918–19–20	3	¼	1¼	¼	....	10½	1¾	10½	1½	32½	1⅛	F	19	2	¼	8	19	2	¼	8	113	33
Rowe CDW2—1916–20	3	¼	1¼	¼	....	10½	1¾	10½	1½	32½	1⅛	F	45	2	¼	4	45	2	¼	4	123	33
Rowe GSW3—1918–20	3	¼	1¼	¼	....	20	1¾	15½	1½	36¼	2	F	51½	2½	¼	4	51½	2½	¼	4	140	33
Rowe HW4—1918–20	3	¼	1¼	¼	....	20	1¾	15½	1½	36¼	2	F	56½	2½	¼	4	56½	2½	¼	4	146	36
Rowe FW5—1914–20	3	¼	1¼	¼	....	20	1¾	15½	1½	36¼	2	F	68	3	1/16	4	68	3	1/16	4	153	38½
Rowe GPW3—1916-17, 1919–20	3	¼	1¼	¼	V	10	1¼	6	1¾	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	152	33
Rumely A-1½	4	¼	1 1/16	1 1/16	V	10½	1¾	10½	1¼	37	2	F	18	2	¼	4	18	2	¼	4	122	34
Samson 15-¾	3	¼	1 1/16	1⅜	V	6½	1¼	7¾	1¼	35 11/16	11/16	V	37	2	¼	1	35¾	1¾	¼	1	108¼	39½
Samson 25-1¼	3	¼	1 1/16	1⅜	V	6½	1¼	7¾	1¼	37 11/16	11/16	V	43⅜	2	¼	1	37 1/16	1¾	¼	1	108¼	39½
Sandow G-1—1918–20	3	¼	1	¼	....	.....	.....	.....	.....	.....	.....	.....	20	2	¼	2	20	2	¼	2	96	34
Sandow CG-1½1918—20	3	¼	1	¼	....	.....	.....	.....	.....	.....	.....	.....	20	2	¼	2	20	2	¼	2	120	34
Sandow I-2—1918–20	3	¼	1	¼	....	.....	.....	.....	.....	.....	.....	.....	60	3	¼	1	60	3	¼	1	132	32
Sandow J-2½—1918–20	3	¼	1¼	¼	....	.....	.....	.....	.....	.....	.....	.....	13½	3½	¼	2	16	3½	¼	2	144	32
Sandow L-5—1918–20	3	¼	1¼	¼	....	.....	.....	.....	.....	.....	.....	.....	24	4½	¼	2	24	4½	¼	2	144	37
Sandow M-3½—1918–20	3	¼	1¼	¼	....	.....	.....	.....	.....	.....	.....	.....	18½	4	¼	2	18½	4	¼	2	144	37
Sanford 25-2½—1917–20	3	¼	1¼	1¼	....	.....	.....	.....	.....	.....	.....	.....	51½	2¼	¼	2	51½	2½	¼	2	144	35
Sanford W35-2½—1917–20	3	¼	1¼	1¼	....	.....	.....	.....	.....	.....	.....	.....	56	2½	¼	2	56	2½	¼	2	145	35
Sanford W50-5—1917–20	3	¼	1¼	1¼	....	.....	.....	.....	.....	.....	.....	.....	69	3	¼	2	69	3	¼	2	145	35
Schacht F-2	4	¼	1¼	2	H	11	2	14	1¼	37½	2	F	8¼	3	¼	4	13½	3	¼	4	140	35⅝
Schacht F-3	4	¼	1¼	2	H	11	2	14	1¼	37½	2	F	8¼	3	¼	4	13½	3	¼	4	140	35⅝
Schacht E-4	4	¼	1¼	2	H	10½	2	13½	1¼	39½	⅞	V	8¼	3	¼	4	15	4	⅜	4	152	35¾
Schacht E-5	4	¼	1¼	2	H	10½	2	13½	1¼	39½	⅞	V	8¼	3	¼	4	15	4	⅜	4	152	35¾
Schacht E-7	4	¼	1¼	2	H	10½	2	13½	1¼	39½	⅞	V	8¼	3	¼	4	15	4	⅜	4	152	35¾
Schwartz A-1¼—1921	3	¼	1	¼	V	9½	2¼	13	2¼	29½	⅞	F	19¾	1¾	¼	4	19⅝	1¾	¼	4	.....	.....
Schwartz BW-1½	4	¼	1	¼	H	10	1¾	18	1¼	33⅛	2	F	19	2	¼	4	19	2	¼	4	120	34
Schwartz CWS-CW-CWL-2½	4	¼	1¼	¼	H	10½	2	15	1¼	33⅛	2	F	48	2¼	¼	2	48	2¼	¼	2	.....	36
Schwartz DWS-DW-DWL-5	4	¼	1½	¼	H	12½	2	17	1¼	38⅜	2	F	69½	3	¼	2	69½	3	¼	2	.....	36
Selden Unit 30—1919–20	3	¼	1	1 1/16	V	12	2	.....	.....	41	1¼	F	11 1/16	3¼	¼	4	11 1/16	3¼	¼	4	114	34
Selden Unit 50—1920	3	¼	1	1 1/16	V	3¾	1¼	12	1¼	31	1½	F	13	3½	¼	4	13	3½	¼	4	134	34
Selden Unit 31	3	¼	1	1 1/16	V	3¾	1¼	12	1¼	31	1½	F	13	3½	¼	4	13	3½	¼	4	176	34
Selden Unit 70—1919–20	3	¼	1¼	1 1/16	V	9	1¾	5½	1¾	34⅛	2	F	15⅝	3¾	¼	4	15⅝	3¾	¼	4	153	37⅛
Selden Unit 51	3	¼	1½	1 1/16	V	7½	1½	15½	1¼	31½	2	F	15⅝	3¾	¼	4	15⅝	3¾	¼	4	209	37⅛
Selden Unit 90—1920	3	¼	1½	1 1/16	V	7	2	20½	2	40 3/16	2	F	17 11/16	4	¼	4	17 11/16	4	¼	4	153	37½
Service 12-¾-1922	3	¼	1 1/16	1 1/16	V	13½	2½	14½	2½	35½	1¼	F	10 1/16	2½	¼	4	10 1/16	2½	¼	4	101½	37
Service 15-1921–1¼	3	¼	1 1/16	1 1/16	V	10	1¾	2	1¼	35	2	F	19¾	1¾	¼	4	19⅝	1¾	¼	4	101½	37
Service 220-1½—1919–20	3	¼	1 1/16	1 1/16	H	10	2	6	1¾	37¾	1	F	12	3¼	¼	2	12	3¼	¼	2	109½	34
Service 31-2—1919–20	4	¼	1 1/16	1 1/16	V	10	2	8	1¼	33	1¼	F	12	3¼	¼	2	12	3¼	¼	2	121	34
Service 36-2—1919–20	4	¼	1 1/16	1 1/16	V	10	2	8	1¼	33	1¼	F	12	3¼	¼	2	12	3¼	¼	2	121	34
Service 51-3—1919–20	4	¼	1 1/16	1 1/16	V	10	2	8	1¼	33	1¼	F	13½	3½	¼	2	13½	3½	¼	2	131 1/16	34
Service 71-3½—1919–20	4	¼	1 1/16	1 1/16	V	10	2	8	1¼	33	1¼	F	16	3¾	¼	2	16	3¾	¼	2	150¼	38
Service 76-4—1919–20	4	¼	1 1/16	1 1/16	V	10	2	10	1¼	38¼	1½	F	16	3¾	¼	2	16	3¾	¼	2	145¾	38
Service 101-6—1919–20	4	¼	1 1/16	1 1/16	V	10	2	10	1¼	38¼	1½	F	18½	4	¼	2	18½	4	¼	2	145¾	38
Signal NF-1	4	¼	1 1/16	1 1/16	....	7¼	1½	12	1½	39¾	1¼	....	11	3	¼	4	11	3	¼	4	120	.....
Signal H 1¾	3	¼	1 1/16	1 1/16	....	8	1½	9	1¼	30½	1¼	....	12	3¼	¼	2	12	3¼	¼	2	120	34
Signal J-2½	3	¼	1 1/16	1 1/16	....	10	1½	12	1¼	30½	1¼	....	13½	3½	¼	2	13½	3½	¼	2	126	34
Signal M 3½	3	¼	1 1/16	1 1/16	....	5½	1½	12	1¼	34¼	1¼	....	16	3¾	¼	2	16	3¾	¼	2	168	38
Signal R-5	3	¼	1 1/16	1⅛	....	8	2	16	2	41	2	....	18	4	¼	2	18	4	¼	2	172	38
Standard I-K-1-1½	3	¼	1	1 1/16	V	10½	2 1/16	14¾	1 1/16	39¼	1¼	F	10 7/16	3	¼	4	10 7/16	3	¼	4	120	32
Standard 76-2½-3	3	¼	1¼	1 1/16	V	.....	1 1/16	12	1 5/16	31¼	1¼	F	13 1/16	3½	¼	4	13 1/16	3½	¼	4	122	32
Standard 66-3½-4	3	¼	1¼	1 1/16	V	12	2 1/16	18	1 5/16	36½	1½	F	15⅝	3¾	¼	4	15⅝	3¾	¼	4	144	38
Standard 5K-5-7	3	¼	1½	1 1/16	V	8	2 1/16	3½	2 5/16	42¼	2	F	17 11/16	4	¼	4	17 11/16	4	¼	4	144	38
Sterling 1½—1922–23	3	¼	1¼	¼	V	11	1½	19	1½	38	1½	F	11¾	3¼	¼	4	11¾	3¼	¼	4	120	33½
Sterling 2—1922–23	3	¼	1¼	¼	V	11	1½	19	1½	38	1½	F	13⅜	3½	¼	4	13⅜	3½	¼	4	120	33½
Sterling 2½—1922–23	3	¼	1¼	¼	V	11	1½	19	1½	38	1½	F	13⅜	3½	¼	4	13⅜	3½	¼	4	138	34
Sterling 3½—1922–23	3	¼	1½	¼	V	14⅝	1½	22	1½	40½	1½	F	15¾	3¾	¼	4	15¾	3¾	¼	4	144	38
Sterling 5-Worm—1922–23	3	¼	1½	¼	V	11	1½	19	1½	40½	1½	F	17 11/16	4	¼	4	17 11/16	4	¼	4	158	38
Sterling 5-Chain—1922–23	3	¼	1½	¼	V	11	1½	19	1½	40½	1½	F	56½	3½	¼	2	34 11/16	4	¼	1	158	38
Sterling 7½—1922–23	3	¼	1½	¼	V	11	1½	19	1½	40½	1½	F	56½	3½	¼	2	34 11/16	4	¼	1	158	38
Stewart M7-2—1918–20	3	¼	.....	1 1/16	.....	.....	.....	.....	.....	.....	.....	.....	50⅝	2	¼	2	8	5	¼	2	132¾	32
Stewart M15-1—1920	3	¼	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	41⅜	2	¼	2	22¾	2	¼	1	99½	32
Stewart M9-1¼—1918–20	3	¼	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	48½	2	¼	2	8	5	¼	2	119¼	32
Stewart M10-3½—1918–20	3	¼	.....	1 3/16	.....	.....	.....	.....	.....	.....	.....	.....	60	3	¼	2	8	5	¼	2	139¾	32
Stewart M7X—1920	3	¼	.....	1 1/16	.....	.....	.....	.....	.....	.....	.....	.....	50⅝	2	¼	2	8	5	¼	2	132¾	32
Stewart M10X—1920	3	¼	.....	1 3/16	.....	.....	.....	.....	.....	.....	.....	.....	60	3	¼	2	8	5	¼	2	138	32
Stoughton A-1	4	¼	1	1¼	V	18	1¼	15	1¼	38½	1¾	F	16	1¾	¼	4	16	1¾	¼	4	88	34
Stoughton B-1½	4	¼	1	1¼	V	18	1¼	15	1¼	39¼	1½	F	19	2	¼	4	19	2	¼	4	116	34
Stoughton D-2	4	¼	1¼	1 3/16	V	8½	1½	15	1¼	42	2	F	45	2	¼	2	45	2	¼	2	116	34
Stoughton F-3	4	¼	1¼	1 3/16	V	9½	1¾	15	1¼	42	2	F	52	2¼	¼	2	52	2¼	¼	2	127	36
Super-Truck 50—1920	3	¼	1¼	1 1/16	V	19	1¾	19	1½	37½	1⅞	F	51½	2¼	¼	2	51½	2¼	¼	2	135	34
Super-Truck 70—1920	3	¼	1¼	1 1/16	V	18½	1¾	19	1½	37½	1⅞	F	55½	2½	¼	2	55½	2½	¼	2	144	34
Super-Truck 100—1920	3	¼	1½	1 1/16	V	6	1¾	19	1¾	42	1⅞	F	68	3	¼	2	51½	3	¼	2	144	34
Superior D-1—1919–20	3	¼	1	1	....	11	2	10	2	39	1	F	45	2½	¼	2	44	2¼	¼	2	97¾	34
Superior E-2—1919–20	3	¼	1	1 1/16	....	8½	1¼	15	1¼	29	1	F	54	2½	¼	2	53½	2½	¼	2	114	34
Thomart Speed	3	¼	1¼	1 1/16	V	9	1¼	7¼	1¼	36½	2	F	19⅜	1¾	¼	4	19⅜	1¾	¼	4	102	34
Tiffin GW-1½—1920–22	3	¼	1¼	1¼	V	.....	.....	.....	.....	.....	.....	.....	46	2	¼	1	46	2	¼	1	114	35
Tiffin MW-2½—1920–22	3	¼	1¼	1¼	V	.....	.....	.....	.....	.....	.....	.....	52	2¼	¼	1	52	2¼	¼	1	138½	32¾
Tiffin PW-3½—1920–22	3	¼	1¼	1¼	V	.....	.....	.....	.....	.....	.....	.....	58	2½	¼	1	58	2½	¼	1	151	35½
Tiffin TW-5—1920–22	4	¼	1½	1½	V	.....	.....	.....	.....	.....	.....	.....	68	3	¼	1	68	3	¼	1	156	38½
Tiffin UW-6—1920–22	4	¼	1½	1½	V	.....	.....	.....	.....	.....	.....	.....	68	3	¼	1	68	3	¼	1	156	38½
Titan 3½—1919	4	¼	1½	1¾	....	.....	.....	.....	.....	.....	.....	.....	60	2¼	¼	2	14	4½	¼	2	144	34
Titan 5-6—1918–20	4	¼	1½	1¾	....	.....	.....	.....	.....	.....	.....	.....	90	2¼	¼	2	14	4½	¼	2	144	34
Titan 2½—1920	4	¼	1½	1¾	....	.....	.....	.....	.....	.....	.....	.....	54	2¼	¼	2	26	4	¼	1	144	32
Tower J-1¼—1920	3	¼	1¼	1¼	....	.....	.....	.....	.....	.....	.....	.....	11¾	3¼	¼	4	11¾	3¼	¼	4	135¼	32½
Tower H-2½—1919–20	3	¼	1¼	1¼	....	.....	.....	.....	.....	.....	.....	.....	13 1/16	3½	¼	4	13 1/16	3½	¼	4	138¾	32½

Replacement Table—Continued

Name, Model and Tonnage	ENGINE												BRAKE LINING								FRAME	
	Piston Rings		Carburetor			Upper Hose		Lower Hose		Fan Belt			Service				Emergency				Length	Width
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Over All
Tower G-3½—1919-20-21	3	⅛	1½	1½	...								15⅝	3¾	¼	4	15⅝	3¾	¼	4	152	37
Traffic C-4000—1919-20	3	⅛	1	⅛	H	10½	2	10½	2	41¼	1¼	F	43½	2½	⅛	2	38	1¾	⅛	2	120¾	42
Traffic 6000-1921	3	⅛	1	⅛	H	10½	2	10½	2	41¼	1¼	F	...	...	...	...	...	...	...	...	120¾	34
Traffic Speedboy-1921	3	⅛	1	⅛	H	10½	2	10½	2	41¼	1¼	F	43½	2½	⅛	2	38	1¾	⅛	2	86	34
Transport 15-1	3	⅛	1	1	V	12	2	12	2	36½	1	F	48½	2	⅛	2	46½	1½	⅛	2	101	34
Transport 25-1½	3	⅛	1	1	V	10⅜	2	13	2	40⅜	1¼	F	48½	2½	⅛	2	46½	1½	⅛	2	117	34
Transport 35-2	3	¼	1¼	1¼	V	9¼	2	10	1¼	32¾	2	F	10¼	3½	¼	2	48½	2½	⅛	2	123	34
Transport 60-3½	4	¼	1¼	1¼	V	12	2	16	1¼	35⅞	2	F	11⅞	3	⅛	4	58	2½	⅛	2	150	36½
Traylor B-1½	4	¼	1	....	V	.....	.....	.....	.....	38	1	F	50	2	¼	2	50	2	¼	2	117	34
Traylor C-2-2½	4	¼	1¼	....	V	.....	.....	.....	.....	36	2	F	50	2	¼	2	50	2	¼	2	122	34
Traylor D-3-3½	4	¼	1¼	....	V	.....	.....	.....	.....	36	2	F	56½	2¼	¼	2	56½	2¼	¼	2	142	34
Traylor F-5-6	4	¼	1¼	....	V	.....	.....	.....	.....	37	2	F	59	2½	...	2	59	2½	...	2	165	35
Triangle AA-¾—1920	3	⅛	1	1	H	17	2	17	2	34	1	F	22	2½	⅛	1	41	2	⅛	2	94	35
Triangle A-1½—1918-20	3	¼	1	1	V	14	1¼	14½	1¼	39¼	1½	F	7	4	⅛	2	49	2	⅛	2	126	34
Triangle B-2½—1919-20	3	¼	1¼	1¼	V	18	1½	18	1½	39¼	1½	F	7	4	⅛	2	52	3	⅛	2	132	34
Triangle C-2—1920	3	¼	1	1	V	14	1¼	14½	1¼	39¼	1½	F	7	4	⅛	2	52	3	⅛	2	129	34
Triumph HB-2½	4	¼	....	....	V	9	1⅝	17	1¼	32½	2	F	46	2½	⅛	2	32	2½	⅛	2	120	34½
Triumph HC-2	4	¼	....	....	V	9	1⅝	17	1¼	32½	2	F	46	2½	⅛	2	32	2½	⅛	2	120	34½
Ultimate A-2—1920	4	¼	1¼	1⅝	V	11	2	8	1¼	34	2	F	20	2¼	⅛	2	45	2	¼	2	126	32¾
Ultimate AJ2—1920	4	¼	1¼	1⅝	V	11	2	8	1¼	34	2	F	20	2¼	⅛	2	45	2	¼	2	126	32¾
Ultimate AJL-2-1920	4	¼	1¼	1⅝	V	11	2	8	1¼	34	2	F	20	2¼	⅛	2	45	2	¼	2	150	32¾
Ultimate B-3—1920	4	¼	1¼	1⅝	V	11	2	8	1¼	34	2	F	51	2¼	⅛	2	51	2¼	¼	2	144	32¾
Ultimate BL3—1920	4	¼	1¼	1⅝	V	11	2	8	1¼	34	2	F	51	2¼	⅛	2	51	2¼	¼	2	192	32¾
Union F-2½	3	¼	1¼	1¼	V	20	1¾	19½	1½	37¾	2	F	55	3	⅛	1	50	2	⅛	1	133½	32
Union FW-2½	3	¼	1¼	1¼	V	20	1¾	19½	1½	37¾	2	F	26	4½	¼	1	52	3	¼	1	133½	32
Union H-4	3	¼	1¼	1¼	V	20	1¾	19½	1½	37¾	2	F	56¾	3½	⅛	1	32	4½	⅛	1	157½	34
Union HW-4	3	¼	1¼	1¼	V	20	1¾	19½	1½	37¾	2	F	26	4½	¼	1	24	4	¼	2	157½	34
Union JW-6	3	¼	1½	2	V	20	1¾	19½	1½	41½	2	F	34	4	¼	1	28	5	¼	2	196	36
United 1½	...	...	1	1	H	15	2½	16	1½	37½	2	F	48	2	⅛	1	48	1½	⅛	1	120	33
United-2½	...	...	1¼	1	H	7	2½	12	1½	37½	2	F	49	3	⅛	1	49	2½	⅛	1	Opt	33
United 3½	...	...	1¼	1	H	7	2½	7	1½	37½	2	F	62	3	⅛	1	58	2½	⅛	1	Opt	34
United 5	...	...	1½	1	H	14½	2½	12	1½	37½	2	F	88½	2¼	⅛	1	88½	2¼	⅛	1	Opt	38
U.S.N.-1½	3	⅛	1	⅛	H	11½	2	9	1¼	37	1¼	F	50½	2½	⅛	2	46½	1½	⅛	2	120	34
U.S.R.-2½-3	3	⅛	1¼	⅛	V	10	1¼	10	1¼	35	1¾	F	21	2¼	¼	4	19½	2¼	¼	4	144	34
U.S.S.-3½-4	3	¼	1¼	¼	V	9	1½	8	1½	37	1¼	F	50	2½	¼	2	50	2½	¼	2	156	36
U.S.T.-5-6	4	¼	1½	¼	V	15	2	13	1½	38¾	2	F	62	3	¼	4	33	4	¼	1	168	36
U.S.U.-1¼	4	⅛	1	⅛	V	11½	1¾	11½	1¼	33	1¼	F	50½	2½	⅛	2	46½	1½	⅛	2	108	32
Velie 46-1½—1921	3	⅛	1	⅛	V	9½	2¼	12¼	1½	40	¾	V	54	2½	⅛	2	52⅛	2¼	⅛	2	120	31
Vim 29-1½	3	⅛	⅞	....	....	.....	.....	.....	.....	30¾	1	F	14⅞	1½	⅛	4	14⅞	1½	⅛	4	64	30
Vim 30-1½	3	⅛	⅞	....	....	.....	.....	.....	.....	30¾	1	F	14⅞	1½	⅛	4	14⅞	1½	⅛	4	83½	30
Vim 31-1	4	⅛	1	....	....	.....	.....	.....	.....	40	1	F	18	2	¼	4	18	2	¼	4	92	32
Vim 22-2	4	⅛	1	....	....	.....	.....	.....	.....	40	1	F	42⅝	2	¼	2	42⅝	2	¼	2	120⅝	34
Vim 23-3	5	⅛	1¼	....	....	.....	.....	.....	.....	40	1	F	48⅞	2¼	¼	2	48⅞	2¼	¼	2	160	34
Walker M½	...	...	...	...	...	...	...	...	...	...	...	...	43	2¼	⅛	2	14	1¾	⅛	4	90	32
Walker K1	...	...	...	...	...	...	...	...	...	...	...	...	45½	2½	⅛	2	16	2	⅛	4	96	32
Walker L2	...	...	...	...	...	...	...	...	...	...	...	...	53¼	2½	⅛	2	19	2	⅛	4	120	32
Walker P3½	...	...	...	...	...	...	...	...	...	...	...	...	53¼	3	⅛	2	19¼	2½	⅛	4	140	35
Walker N5	...	...	...	...	...	...	...	...	...	...	...	...	53¼	3	⅛	2	19¼	2½	⅛	4	162	35
Walker Johnson A-2	3	⅛	1	1	V	11½	2	7½	1¾	37	1	F	12	3¼	¼	4	12	3¼	¼	4	117	32
Walker-Johnson B3	4	¼	1¼	1¼	V	10	2	8	1¼	33½	1¼	F	13	3½	¼	4	13	3½	¼	4	133	32
Walter S-5	3	¼	2	2	V	10	1½	18	1½	39	1½	F	15	5	¼	4	57	2½	¼	2	150	36
Ward LaFrance 2B-2½-3½—1920	3	¼	1¼	1½	V	7	1½	16	1½	41½	1½	F	13	3½	¼	4	13	3½	¼	4	137½	33
Ward LaFrance 4A-3½-5—1920	3	¼	1¼	1¾	V	8½	1½	18	1½	41½	1½	F	15½	3¾	¼	4	15½	3¾	¼	4	170	37
Ward LaFrance 5A-5-7—1920	3	¼	1½	1¾	V	9¼	1½	18	1½	41½	1½	F	18	4	¼	4	18	4	¼	4	170	37
Watson B1	4	¼	1	1⅛	V	16½	1¾	4	1¼	40	1½	F	41	1¾	⅛	2	41	1¾	⅛	2	90⅛	30
Watson N-3½	3	¼	1¼	1½	V	16½	1¾	3	1¼	34	1¼	F	62	2½	¼	4	47	2½	¼	2	147	37
Watson U-5	3	¼	1¼	1½	V	16½	1¼	3	1¼	38½	1¼	F	15½	3¾	¼	4	15½	3¾	¼	4	.....	36
White Hickory H-1½—1919	3	¼	1¼	1	....	11	2	8	1¼	41	⅝	V	13½	3½	¼	4	13½	3½	¼	4	116¼	32
White Hickory H-1½—1920	3	¼	1¼	1	....	11	2	8	1¼	41	⅝	V	11¾	3¼	¼	4	11¾	3¼	¼	4	116¼	32
White Hickory E-1—1920	3	¼	1¼	1	....	11	2	8	1¼	41	⅝	V	11	3	¼	4	11	3	¼	4	92¼	32½
White Hickory K-2½—1920	3	¼	1½	1¼	...	9	1½	8	1¼	33¼	1¼	F	13½	3½	¼	4	13½	3½	¼	4	150	32
Wichita K-1—1915-20-21-22	3	¼	1⅛	1⅛	V	18½	1¼	12	1¼	52¾	1½	F	19½	2	⅛	4	19½	2	⅛	4	127½	30
Wichita M-2—1915-20-21-22	3	¼	1⅛	1⅛	V	18½	1¼	12	1¼	52¾	1½	F	49	2	⅛	2	49	2	⅛	2	126½	30
Wichita RX-2½—1919-20-21-22	3	¼	1¼	1¾	V	11	1½	11	1½	40	1½	F	54	2¼	⅛	2	54	2¼	⅛	2	130	30
Wichita O-3½—1915-20-21-22	3	¼	1½	1¾	V	11	1½	11	1½	40	1½	F	56½	2½	⅛	2	56½	2½	⅛	2	152½	36
Wichita S-5—1919-20-21-22	3	¼	1½	1¾	V	11	1½	11	1½	40	1½	F	66	3	¼	2	66	3	¼	2	163½	36
Wilcox AA-1—1920	3	¼	1	....	....	.....	.....	.....	.....	.....	.....	.....	47	2½	⅛	2	33¼	2½	⅛	2	96	34
Wilcox B-1½—1920	3	¼	1¼	....	....	.....	.....	.....	.....	.....	.....	.....	47	2½	⅛	2	33¼	2½	⅛	2	132	33
Wilcox C-2½—1920	3	¼	1¼	....	....	.....	.....	.....	.....	.....	.....	.....	57½	2½	⅛	2	42½	2½	⅛	2	141	33
Wilcox E-3½—1920	3	¼	1¼	....	....	.....	.....	.....	.....	.....	.....	.....	57½	2½	⅛	2	42½	2½	⅛	2	156	33
Wilcox F-5—1920	3	¼	1½	....	....	.....	.....	.....	.....	.....	.....	.....	69⅜	3½	¼	2	52	3½	¼	2	148½	36
Wilson 1½—1919-20	4	⅛	...	1	....	.....	.....	.....	.....	.....	.....	.....	39½	1¾	¼	4	39½	1¾	¼	4	120	33
Wilson 2½—1919-20	4	⅛	...	1¼	....	.....	.....	.....	.....	.....	.....	.....	13¼	3½	¼	4	13¼	3½	¼	4	126	33
Wilson 3½—1919-20	4	⅛	...	1½	....	.....	.....	.....	.....	.....	.....	.....	16	3¾	¼	4	16	3¾	¼	4	147	38
Wilson 5—1919-20	4	⅛	...	1½	....	.....	.....	.....	.....	.....	.....	.....	18	4	¼	4	18	4	¼	4	147	38¼
Winther 751-1	3	¼	1	....	H	15¾	2	17	2	36	1	F	42	2	⅛	2	24	2	⅛	1	102	30
Winther 39-1½	3	¼	1¼	....	V	10	1¾	4⅛	1½	33¼	1¼	F	50	2¼	¼	2	22½	2¼	¼	1	120	30
Winther 430-1½	3	¼	1¼	....	V	11¼	1½	11½	1¼	30⅝	1½	F	50	2¼	¼	2	22½	2¼	¼	1	120	30
Winther 450 2½	3	¼	1¼	....	V	11½	1½	6½	1½	37½	1¼	F	52	5	¼	2	22½	2¼	¼	2	120	30
Winther 50-2½	3	¼	1¼	....	V	17⅞	1¾	8	1½	42½	2	F	52	3	¼	2	50	2¼	¼	2	58	33
Winther 51-2½	3	¼	1¼	....	V	17⅞	1¾	8	1½	42½	2	F	52	3	¼	2	50	2¼	¼	2	144	33
Winther 70-3½	3	¼	1¼	....	V	17⅞	1¾	8	1½	42½	2	F	62	3	¼	2	60	2½	¼	2	156	33
Winther 109-5	3	¼	1½	....	V	21½	1¾	8	1½	42¼	2	F	93	2¼	¼	2	93	2¼	¼	2	156	33
Winther 140-7	3	¼	1½	....	V	12	1¾	6	1¾	42¼	2	F	93	2¼	¼	2	93	2¼	¼	2	156	33
Wisconsin 2 (Loganville)	3	¼	1¼	1¼	H	17	2	17	2	34	1¼	F	58	2½	⅛	2	56½	2¼	⅛	2	114	34
Wisconsin 2½ (Loganville)	3	⅛	1¼	1¼	V	12	1½	10	1¼	40	⅝	V	58	2½	⅛	2	56½	2¼	⅛	2	120	34
Witt Will N-1½—1919-22	3	⅛	1¼	1¼	V	8	1½	12	1¼	31	1¼	F	48	3¼	¼	4	48	3¼	¼	4	Opt	32
Witt Will P-2—1919-22	3	⅛	1¼	1¼	V	8	1½	12	1¼	31	1¼	F	52	3½	¼	4	52	3½	¼	4	Opt	32
Wolverine J 1	4	⅛	1	1¼	V	9½	1½	11½	1½	42	1¼	F	42½	2½	⅛	2	38	1¾	⅛	2	110	34½
Wolverine J 1½	4	⅛	1	1¼	V	9½	1½	11½	1½	42	1¼	F	51	3	⅛	2	46	2	⅛	2	120	34½
Wolverine J 2	4	⅛	1	1¼	V	9½	1½	11½	1½	42	1¼	F	51	3	⅛	2	46	2	⅛	2	132	34½
Wolverine K 2½	4	¼	1¼	1¼	V	9½	1½	11½	1½	42	1½	F	55	3	⅛	2	47¼	2	⅛	2	153	34
Wolverine L 3½	4	¼	1¼	1¼	V	9½	1½	11½	1½	44	1½	F	61½	3	⅛	2	58	2½	⅛	2	174	35½
Yellow Cab M22—¾	3	⅛	1	⅛	V	7½	2	9⅝	2	38½	⅝	V	49	2½	¼	2	45	2½	¼	2	60	43
Yellow Cab M42-1¼	3	⅛	1	⅛	V	7½	2	9⅝	2	38½	⅝	V	11	3	¼	4	11	3	¼	4	92	32
Young 5-1	3	⅛	1	....	....	10½	2	9½	2	.....	.....	.....	12	3¼	¼	2	12	3¼	¼	2	109	32
Young 6-2	4	¼	1½	....	....	7½	1¾	11	1¼	36	¾	F	12¾	3¼	¼	2	12¼	3¼	¼	2	116½	33
Young 7-3½	4	¼	1½	....	....	9½	1¾	11½	1¼	38	¾	V	16	3½	⅛	2	16	3½	⅛	2	183½	36

KEY OF ABBREVIATIONS

Key to Page Columns with Numerals at Head of Specification Columns on Pages Following. In All Specifications—O, Own; Op or Opt, Optional

KEY OF ABBREVIATIONS

Note: Numerals on This Page Correspond With Numerals at Head of Specification Columns on Pages Following. In All Specifications—O, Own; Op or Opt, Optional

Engine:
Beav—Beaver
Bud—Buda
Cont—Continental
Dodge—Dodge Bros.
GBS—Golden, Belknap & Swartz
Gr-B—Gray-Beal
Her—Hercules
Hig—Highway
Hin—Hinkley
1 HSp—Herschell-Spillman
LeR—Le Roi
Lib—Liberty
LMF—Light Mfg. & Fdy.
Lyco—Lycoming
Mid—Midwest
Ster—Sterling
Sup-Supreme
TC—Twin City
Vict—Victory
Wau—Waukesha
Wei.—Weidely
Wis—Wisconsin

Valve Arrangement:
H—Overhead
2 L—ELL-Head
T—TEE-Head
S—Sleeve

How Cooled:
A—Air
B—Pump & Thermo
3 C—Centrifugal
G—Gear Pump
T—Thermo-Syphon

Radiator (Make):
BW—B & W
Brm—Brenem
Bus—Bush
Can—Candler
Chic—Chicago
Eag—Eagle
EM—English-Mersick
Eur—Eureka
Fed—Fedders
4 Flex—Flexo
GO—G. & O.
Har—Harrison
Hoo—Hooven
Idl—Ideal
Jam—Jamestown
Kue—Kuenz
Liv—Livingston
Lng—Long
McC—McCord
May—Mayo
Mod—Modine
Per—Perfex
R-T—Rome-Turney
S-W—Sparks-Withington
Spar—Spartan
Spec—Special
Spli—Splitex
Stan—Standard

Radiator (Type):
C—Cellular
5 H—Honeycomb
PT—Plain Tube
ZZT—Zig Zag Tube
Whee—Wheeler
FIN—Fin Tube

Lubrication:
FS—Force and Splash
F—Force Feed
S—Splash

6 Carburetor:
B&B—Ball & Ball
Bent—Bennett
Cart—Carter
Eag—Eagle
Ens—Ensign
Flch—Fletcher
Holl—Holley
John—Johnson
King—Kingston
Mar—Marvel
Mas—Master
Mill—Miller

7 Rayf—Rayfield
Scoe—Scoe
Strm—Stromberg
Shk—Shakespeare
Sheb—Schebler
Stew—Stewart
Till—Tillotson
Zen—Zenith

Fuel Feed:
G—Gravity
8 P—Pressure
V—Vacuum

Governor:
Con—Continental
Del—Delaney
Dup—Duplex
Hin—Hinkley
Mer—Merrill
McC—McCanna
9 Mon—Monarch
Mue—Mueller
Phar—Pharo
Pier—Pierce
Rug—Ruggles
Sim—Simplex
Wau—Waukesha

Clutch (Make):
B. B.—Borg & Beck
B-Li.—Brown-Lipe
Covt.—Covert
Det.—Detlaff
Full.—Fuller
10 D. G.—Detroit Gear & Mach.
Dod.—Dodge Bros.
GB & S—Golden, Belknap & Swartz
Hart—Hartford
Hoos—Hoosier
HS—Hele-Shaw
M-E—Merchant & Evans
Munc.—Muncie
M-P—Muncie Products
T-D—Twin Disc
W-C—Warner Corporation
W-Gr—Warner Gear

Clutch (Type):
D—Disc
C—Cone
11 DP—Dry Plate
WP—Wet Plate
WD—Wet Disc
DD—Dry Disc
Fr—Friction

Ignition System:
Amr—American Swiss
Apo—Apollo
AtK—Atwater Kent
AuL—Auto-Lite
Bos—Bosch
Ber—Berling
Con—Connecticut
Del—Delco
Eis—Eisemann
Kin—Kingston
12 KW—K. W. Ignition Co.
Lor—Louraine
NE—North East
POL—Prest-O-Lite
Rm—Remy
Sim—Simms
Spl—Splitdorf
Tea—Teagle
Wag—Wagner
Wes—Westinghouse

Engine Starter:
AC—Allis-Chalmers
AK—Atwater Kent
AL—Auto-Lite
Bj—Bijur
Bos—Bosch
DL—Delco
13 Dy—Dyneto
GD—Gray & Davis
LN—Leece-Neville
NE—North East
RE—Remy
Wg—Wagner
USL—U. S. L.
W—Westinghouse

Gearset:
B-Li—Brown-Lipe
Cott—Cotta
Covt—Covert
D-Sea—Driggs-Seabury
Det—Detroit
Dod.—Dodge Bros.
Dun—Dundore
14 Durst—Durston
Full—Fuller
G-Le—Grant Lees
MM—Mechanics Mach. Co.
Munc—Muncie
M-P—Muncie Products
Rock—Rockford
W-C—Warner Corporation
W-Gr—Warner Gear

Location of Gearset:
A—Amidships
15 R—Rear
U—Unit with engine
J—Unit with jackshaft

Universal:
A-B—Easton Mch. Co.
Acm—Acme
16 Arv—Arvac
Bear—Bearings Co.
Bld—Blood Brothers
Det—Detroit
Dit—Ditwiler
Eas—Easton
Flex—Flexite
Hart—Hartford
KB—Kinsler-Bennett
Mech—Mechanics
M-E—Merchant & Evans
Nor—Norwalk
Pet—Peters
Sned—Snead
Spic—Spicer
Ster—Sterling
Ther—Thermoid
UM—Universal Machine
UP—Universal Products
Var—Varied

Springs:
All—Alloy Steel
Am—Am. Auto Parts
Bea—Beans
Cham—Champion
Coop—Cooper
Del—Delany
Det—Detroit
GC—Garden City
Har—Harvey
Hig—Higgins
IC—Iron City
Jax—Jaxon
Kal—Kalamazoo
Lah—Laher
17 Lig—Liggett
Mar—Maremont
Math—Mather
Mer—Merrill
Nat—National
Pen—Penn
Per—Perfection
Row—Rowland
Shel—Sheldon
SP—Spring Perch
Stan—Stan-Par
Ster—Sterling
Tem—Temme
Tut—Tuthill
US—United States
Wis—Wisconsin

Final Drive:
B—Bevel Gear
C—Chain
I—Internal Gear
N—Concentric Spur
18 P—Spur
R—Double Reduction
S—Spiral Bevel
W—Worm

Rear Axle (Make):
Amr—American
Badg—Badger
Fli—Flint
Col—Columbia
Stan—Chicago
Cl—Clark
Dun—Dunkirk
19 Eat—Eaton, Stan-Par
Fli—Flint
Hind—Hindley
Ir.M—Iron Mt.
Keno—Kenosha
Stn—Stanweld
Rock—Rockford
Russ—Russel
Sals—Salisbury
Sav—Savage
Shel—Sheldon
Thom—Thomson
Tim—Timken
Torb—Torbensen
W-M—Weston-Mott
US—United States
Vul—Vulcan
Walk—Walker
Wis—Wsconsin

Rear Axle (Type):
Flot—Floating
½-Fl—Semi-Floating
¾-Fl—¾-Floating
20 D—Dead

Steering Gear:
CAS—C. A. S. Products Co.
Dit—Ditwiler
Dod.—Dodge Bros.
Gem—Gemmer
Jac—Jacox
KH—Keystone Hendley
Lav—Lavine
21 M-P Muncie Products
Ros—Ross
Sag.—Saginaw Products Co.
W-C—Warner Corporation
Woh—Wohlrab

Wheels:
Arc—Archibald
AuW—Auto Wheel
Bim—Bimel
Cla—Clark
C&M—Crane & McMahon
Day—Dayton
Det—Detroit
E&O—Eberly & Oris
Hay—Haynes
Hoo—Hoopes Brothers
Jon—Jones
Kel—Kelsey
22 MM—Michigan Malleable Iron Co.
Mot—Motor Wheel
Mut—Mutual
Nor—Northern
Pru—Prudden
Roy—Royer
Rus—Russell
Sal—Salisbury
Sch—Schwartz
Smi—Smith
Sta—Stanwell
StM—St. Mary
Stn—Standard
Wal—Walker
Wan—Wayne
W-L—Waterhouse & Lester
Wes—Western Wheel Co.

Rim Equipment:
Bak—Baker
Det—Detroit
23 Fir—Firestone
Gdy—Goodyear
Hay—Hayes
Jax—Jaxon
Kel—Kelsey
Ken—Kennedy

Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Tractor-Trucks Will be Found at the End of Gasoline Commercial Cars

See Also Replacement Table in "Service and Repair Departments." Truck Frame Dimensions Are Included in Replacement Table

(Where prices are not given it is because we have been unable to get them from authoritative sources)

*** An asterisk in front of the model name indicates that corrections have been made somewhere in the specifications since the previous month**

Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N.A.C.C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels
1000 Pounds		1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			21			22	23			
Dodge Brothers	730	Own	3⅛x4½	24	L	C	McC	PT	FS	Stew	V	.....	Own	DD	NE	NE	Own	U	3	Own	Own	S	Own	Flot	4.16	19.4	Own	32x4*	32x4*	Kel	Kel	1987	114	66.5
Dort	685	Lyo 7000	3½x5	19.6	L	T	Fed	C	S	Cart	V	.....	Own	C	Con	Bos	Own	U	3	MM	Lig	S	Fli	¾ Fl	4.45	15.13	Sag	31x4*	31x4*	Imp	Cle	2015	105	.....
Vim 29	1050	Own	3⅛x4½	15.6	L	T	McC	Fin	FS	Zen	G	.....	B.B.	DD	Wes	W	Own	U	3	Spic	Shel	W	Own	.....	5.5	.....	CAS	31x4*	31x4*	Hoo	Fir	2175	108	.....
Vim 30	1175	Own	3⅛x4½	15.6	L	T	McC	Fin	FS	Zen	G	.....	B.B.	DD	Wes	W	Own	U	3	Spic	Shel	W	Own	.....	5.5	.....	CAS	32x4½*	32x4½*	Hoo	Fir	2290	127	.....
1500 Pounds																																		
Acason Fast	.....	Own	3¾x5	22.5	L	C	.....	C	F	Sheb	V	.....	Full	D	Eis	W	Full	U	3	Bld	Det	W	Timk	½ Fl	6.25	25	Ros	34x5*	34x5*	Bim	.....	3080	142	.....
Brockway E	.....	Buda WU	3⅞x5⅛	22.5	L	T	Lng	Fin	FS	Strm	V	.....	W-Gr	DD	Rm	RE	W-Gr	U	3	Spic	Row	S	Col	¾ Fl	5.86	25.	Gem	35x5*	35x5*	.....	Fir	3450	135	70
Chevrolet G	745	Own	3 ⅛x4	21.7	H	T	B	Har	...	FS	Zen	G	.....	.....	C	Rm	AL	M-P	...	3	Own	.....	S	.....	½ Fl	.....	.....	M-P	31x4*	34x4½*	.....	Jax	2167	120	.....
Clydesdale 18	1890	Cont N-3¾	3¾x5	22.5	L	C	T	Own	PT	FS	Zen	V	Own	B-Li	DD	Eis	Bj	B-Li	U	3	Spic	Stan	W	Timk	½ Fl	5	16.6	Ros	34x5*	34x5*	.....	.....	3200	136	64
Garford 15	.....	Buda MU	3⅝x5⅛	21	L	C	T	Lng	PT	F	Strm	G	.....	.....	DD	AtK	AK	Own	U	3	Spic	Per	W	Timk	½ Fl	6.25	.....	Gem	34x5*	34x5	.....	.....	3500	132	.....
H. R. L.-L	2200	H-Sp 7000	3½x5	19.6	L	T	T	Fed	Fin	F	Zen	V	.....	Own	DP	Bos	GD	Covt	U	3	Spic	Shel	W	Wis	½ Fl	6.2	22.	Ross	34x4½*	35x5*	Sch	Gdy	3300	134	.....
*Internat'l Speed Truck S	1500	Lyco-Int'l	3½x5	19.6	L	T	T	Lng	Fin	FS	Ens	G	.....	Mun	DP	Con	AL	Mun	U	3	Sned	Stan	I	Torb	D	6.3	.....	CAS	34x5*	34x5*	Opt	.....	2600	124	50
Napoleon 7	1350	H-Sp 7000	3½x5	19.6	H	T	T	Own	H	F	Sheb	G	.....	B.B.	D	Eis	GD	MM	U	3	UP	Math	I	Torb	D	5.1	.....	Lav	33x4*	33x4*	Roy	Fir	2800	121	.....
Ogden A 2	.....	Cont N	3½x5	19.6	L	T	T	Chic	Fin	FS	Strm	V	.....	B-Li	DD	Spl	.....	B-Li	U	3	M-E	Tut	W	Timk	½ Fl	6.2	.....	Ros	34x5	34x5	Stn	.....	3100	125	70
Rainier R11	1990	Cont-N	3½x5	19.6	L	T	T	Har	H	FS	Zen	V	Mon	B-Li	DP	Eis	.....	B-Li	U	3	Hart	Per	W	Timk	½ Fl	7.2	23.9	Lav	35x5*	35x5*	.....	Fir	2350	125	80
Republic Rapid Transit	1250	Lyco KB	3½x5	19.6	L	T	T	Own	C	FS	Strm	V	.....	Own	DD	AuL	AL	Own	U	3	Spic	Math	I	Torb	D	5.38	15.06	Jac	32x4½*	32x4½*	Mot	Fir	2650	124	.....
*Samson 15	595	Own	3 ⅛x4	21.8	H	T	T	Own	Pt	FS	Zen	G	Mon	Own	D	Rm	AL	Own	A	3	Own	Own	S	Own	½ Fl	6.33	21.02	Own	32x4*	32x4*	Own	Hay	2300	118	46
Service 12	.....	Mid 409	3¼x4½	16.9	H	C	C	Lng	Fin	F	Strm	G	.....	Hos	DP	Rm	Rm	Det	U	3	M-E	Shel	B	Timk	½ Fl	6.88	22.1	Ros	32x4½*	32x4½*	Bim	Fir	2720	128	.....
Stewart 14	1195	.....	3⅝x5⅛	21	L	C	C	Bus	PT	F	Zen	G	.....	.....	DP	Rm	.....	.....	U	3	Spic	Det	I	Cl	D	5.5	16.99	Ros	32x4½*	32x4½*	Way	Fir	3090	123	70
Stoughton C	1240	.....	3½x5	19.6	L	T	T	.....	Fin	FS	Strm	G	.....	.....	DP	Wes	W	Own	...	...	Ther	.....	B	.....	.....	5.87	23.5	.....	34x4½*	34x4½*	.....	.....	2480	131	.....
*Triangle AA	1285	H-Sp	3¼x5	16.9	L	T	P	Per	ZZT	FS	Strm	G	.....	Full	DD	NE	NE	Full	U	3	UP	Det	I	Cl	D	6.75	20.	Gem	34x4½	34x4½	Hay	Fir	2600	115	60
*Watson B	1865	Wau BUX	3¾x5¼	22.5	L	C	T	GO	C	FS	John	G	Wau	B-Li	DP	Con	D	B-Li	U	3	M-E	Shel	W	Emp	½ Fl	6.2	20.7	Lav	35x5	35x5	Hoo	Fir	2900	128	60
White 15	2400	Own	3¾x5½	22.5	L	C	T	.....	C	FS	Own	G	.....	Own	D	.....	.....	Own	A	4	Own	.....	B	Own	½ Fl	.....	.....	Own	34x5*	34x5*	.....	Fir	3200	133	.....
Yellow Cab M-22-¾	1590	Cont V-4	3¾x5	22.5	L	C	T	Lng	Fin	FS	Zen	G	.....	B-Li	DD	Bos	.....	B-Li	U	3	Spic	Math	B	Timk	.....	4.9	16.31	Gem	33x4½*	33x4½*	Stn	Fir	2400	117	65
1 Ton																																		
Acason R	.....	Wau B.U.X.	3¾x5¼	22.5	L	P	T	Can	C	S	Sheb	V	Wau	Full	.....	Eis	.....	Full	U	4	Bld	Det	W	Timk	½ Fl	7.20	34.5	Ros	36x3½	36x5	Bim	Opt	3650	142	.....
*Acme 20	.....	Cont N	3¾x5	22.5	L	T	T	GO	C	FS	Rayf	V	Dup	B.B.	DP	Eis	GD	Cott	U	3	Bld	Det	W	Timk	½ Fl	6.2	24.8	Ros	35x5*	35x5*	Bim	.....	3050	129	47
*Apex G	.....	Cont N	3¾x5	22.5	L	T	T	GO	C	FS	Rayf	V	Dup	B.B.	DP	Eis	GD	Cott	U	3	Bld	Det	W	Timk	½ Fl	7.2	28.8	Ros	34x3½	34x5	Bim	.....	3406	129	49
Apex	1750	Buda NU	3⅝x5½	21	L	T	T	GO	C	S	Strm	V	.....	Full	D	AuL	AL	Eull	U	3	Bld	Det	W	Timk	.....	6.25	.....	Lav	35x5*	35x5*	Roy	Fir	2650	130	70
*Armleder 20	2350	Buda CTU	3¾x5¼	22.5	L	P	T	Lng	Fin	F	Zen	V	Phar	Full	DD	Bos	W	Full	U	3	Spic	Math	W	Timk	Flot	7.25	29	Ros	34x3½	34x5	StM	.....	4200	148	.....
Atlas Merchant's Dispatch	1185	Lyco	3½x5	19.6	L	T	T	Own	H	S	Strm	V	.....	B.B.	DD	AtK	Bj	Own	...	3	Ster	IC	W	Own	½ Fl	6	16.8	CAS	32x4½*	32x4½*	.....	.....	2650	130	70
Avery	.....	Own 6	3 x4	21.6	L	T	C	Own	C	S	Strm	V	Own	Own	DP	KW	W	Own	U	3	Pet	Math	I	Torb	D	8	26.66	Ros	34x5*	34x5*	StM	Gdy	2800	129	73
Bell M	1495	Buda	3⅝x5½	21	L	T	C	Chic	PT	F	Zen	V	.....	B.B.	DP	Eis	.....	Mun	U	3	Ther	Det	W	Timk	.....	7.2	.....	Dit	35x5	35x5	Bim	Fir	2500	126	65
Belmont "B"	1525	Buda MU	3⅝x5⅛	21	L	C	C	R-T	Fin	S	Zen	G	.....	GBS	.....	Con	Dy	.....	U	3	Ster	Math	B	Fli	¾ Fl	5.2	15.75	Lav	31x4*	31x4*	E-O	Stn	2000	113	60
Bessemer G	.....	Cont N	3½x5	19.6	L	T	T	Std	C	FS	Strm	G	.....	Full	DD	Bos	.....	Full	U	3	Arv	Per	I	Torb	D	7.1	20.25	Ros	34x3½	34x4	Sch	Fir	3000	124	57
Birch 1	1285	Vict	3½x5	19.6	I	C	T	Chic	PT	FS	Strm	G	.....	Full	DD	Con	.....	Full	U	3	UM	.....	I	Cl	D	.....	.....	Lav	32x3½*	32x4*	.....	.....	3200	132	.....
Chevrolet T	1125	Own	3 ⅛x5¼	21.7	H	C	T	Har	.....	FS	Zen	G	Mon	.....	C	Rm	AL	M-P	...	3	Arv	.....	W	.....	½ Fl	.....	.....	M-P	33x4*	35x5*	.....	Jax	2840	125	.....
Clydesdale 20	2385	Cont	3¾x5	22.5	L	T	T	Own	PT	FS	Zen	V	Own	B-Li	DD	Eis	Bj	B-Li	U	4	Spic	Stan	W	Timk	½ Fl	6.2	20.4	Ros	34x5*	34x5*	.....	.....	3500	136	67
Collier 18	.....	Cont N	3½x5	19.6	L	T	P	Lng	PT	S	Zen	V	Mon	Full	DP	Eis	.....	Full	U	3	UP	Math	W	Timk	½ Fl	7.75	31	Ros	34x4	34x5	Bim	Fir	3210	140	70
*Corbitt E-22	1480	Cont N¾	3¾x5	22.5	L	T	P	McC	Fin	FS	Strm	V	.....	B-Li	DD	Eis	.....	B-Li	U	3	Hart	Shel	W	Shel	½ Fl	6	20	Ros	34x3½	34x4	Bim	Fir	3100	130	75
*Day Elder AS	1600	Cont N	3¾x5	22.5	L	T	C	Bus	Fin	FS	Zen	G	.....	Covt	DD	Eis	.....	Covt	U	3	Hart	IC	W	Shel	½ Fl	6	21.96	Gem	35x5*	35x5*	Jon	Fir	3000	128	70
Dearborn E (Speed)	1600	Buda MU	3⅝x5½	21	L	T	C	Chic	PT	F	Strm	V	.....	Full	DP	Bos	Bos	Full	U	3	Hart	.....	W	Wis	½ Fl	6.2	18.6	Dit	35x5*	35x5*	.....	Fir	3280	133	65
Defiance G	1695	Hig	3¾x5	22.5	L	C	P	Per	C	FS	Strm	V	.....	B.B.	D	Eis	AL	G-Le	U	3	Arv	Det	B	Eat	.....	5.5	.....	Own	35x5*	35x5*	StM	Fir	2700	128	.....
Denby 31	1485	Cont	3½x5	19.6	L	T	T	Lng	PT	FS	Strm	G	.....	Full	DD	Eis	RE	Full	U	3	UP	Det	B	Col	½ Fl	5.85	23.46	Ros	35x5*	35x5*	Mot	Fir	2840	130	73
Diehl A	.....	Cont N	3½x5	19.6	L	T	T	.....	H	FS	Zen	G	.....	B.B.	.....	Sim	.....	Durs	...	3	KB	Mar	I	Torb	D	5.3	.....	Ros	34x4½*	35x5*	Sch	Fir	2400	115	90
*Earl 40	995	Own 40	3 ⅛x5¼	18.9	L	T	C	SW	ZZT	FS	Scoe	V	.....	B.B.	DP	Con	AL	Own	U	3	Own	Math	S	Own	½ Fl	4.875	13.91	CAS	32x4*	32x4*	Hay	Hay	.....	112	52
*Eugol	1795	Buda MU	3⅝x5½	21	L	C	C	Chic	PT	F	Strm	V	.....	UC	DD	.....	W	UC	U	3	Pet	Math	W	Timk	½ Fl	6.25	30.3	Ros	34x5*	34x5*	Bim	Fir	3500	135	70
Federal SD	1800	Cont J-4	3¾x5	22.5	L	T	C	Own	Fin	F	Zen	V	Phar	B.B.	DP	Eis	.....	Own	A	3	Spic	Math	W	Timk	½ Fl	7.2	20.65	Gem	35x5*	36x6*	Det	Det	3600	132	65
Ford T	430	Own	3¾x4	22.5	L	T	C	Own	Fin	S	.....	G	.....	Own	.....	Own	.....	Own	U	2	Own	Own	W	Own	½ Fl	Opt	19.9	Own	30x3½*	32x4½	.....	.....	1380	124	.....
Forschler A	.....	Cont N	3½x5	19.6	L	C	T	EM	.....	FS	Zen	V	Dup	Full	.....	Bos	Op	Full	...	3	Hart	Own	W	Shel	.....	.....	.....	Ros	34x3	34x4	.....	.....	3450	120	.....
Fulton A	1750	H-Sp-7000	3½x5	19.6	L	T	C	Liv	H	FS	Cart	G	.....	DP	B.B.	Ber	W	Durs	U	3	Spic	Row	B	Col	.....	6.8	.....	Lav	35x5	35x5	Hoo	Fir	2800	130	65
G. M.C. K-16	1495	Own	3½x5½	19.6	L	T	C	Own	Fin	F	Mar	V	Own	Own	DD	Eis	Ow	Own	U	3	UM	Det	B	Own	¾ Fl	6	21.9	Own	34x5*	34x5*	Kel	.....	3300	132	66
*Graham Brothers	1265	Dodge	3 ⅛x4½	24	L	T	C	.....	.....	FS	Stew	V	.....	Dod	D	NE	NE	Dod	U	3	Var	Det	S	Own	½	6.28	29.29	Dod	33x4½*	34x5*	.....	.....	2515	140	75
Gramm-Pioneer 10 Speed T	1365	Lyco	3½x5	19.6	L	T	C	Own	Fin	S	Strm	G	.....	B.B.	DP	Con	AL	.....	U	3	Own	Per	B	Sals	¾ Fl	5.75	21	Ros	33x5*	33x5*	.....	Fir	2875	129	90
Higrade A18	2100	Cont N	3½x5	19.6	L	T	C	Per	PT	FS	Zen	V	Dup	Full	DD	Sim	AL	Full	U	3	Bld	Per	W	Shel	.....	7.7	22.75	Lav	35x5	35x5	Det	Fir	2700	118	66
Independent B (Iowa)	1665	Cont N	3½x5	19.6	L	C	C	GC	PT	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	3	Bld	GC	I	Russ	D	.....	.....	Lav	34x3	34x4	StM	Fir	3480	135	75
International 21	1760	Own	3½x5¼	19.6	L	T	C	Own	Fin	FS	Ens	G	Own	Own	DP	Bos	Own	Own	A	3	Own	.....	I	Own	D	7	25.	Own	36x3½	36x3½	Own	.....	3030	115	50
Kearns	1150	H-Sp. 7000	3½x5	19.6	L	T	T	Own	H	FS	Zen	G	Pier	B.B.	DD	Ber	Dy	G-Le	U	3	M-E	Math	I	Torb	D	5.3	24.	Lav	32x4½*	32x4½*	.....	Fir	2000	118	65
Kissel Speed	1585	Own 80000	3 ½x5½	24.1	L	C	McC	PT	S	Strm	V	.....	W-Gr	DP	Rm	.....	W-Gr	U	3	Spic	Math	W	Timk	Flot	5.17	18.9	Jac	34x5*	34x5*	StM	.....	3780	140	66

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Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight	Wheelbase	Pr. Cent of W eight on Rear Wheels
1½ Ton—Con'd		1		2	3	4	5	6	7	8	9		10	11	12	13	14	15		16	17	18	19	20			21			22	23			
Erie E-1½	.....	Buda CTU	3¾x5¼	22.5	L	C	Fed	C	FS	Zen	V	.....	Full	D	Bos	Bos	Full	A	3	Arv	Per	W	Shel	½Fl	7.8	31.2	Ros	36x6*	36x6*	Bim	Fir	4400	144	75
Federal TE	2175	Cont C4	4 1/16x5¼	27.2	L	C	Own	PT	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Mat	W	Timk	Flot	8.5	37.4	Gem	36x3½	36x5	Sch	Fir	4250	144	68.5
Forschler C	.....	Cont N	3½x5	19.6	L	C	Own	.....	FS	Zen	V	Dup	Full	.....	Bos	Op	Full	...	3	Hart	Own	W	Shel	.....	.....	.....	Ros	36x3½	36x5	Smi	.....	3670	120	.....
Front Drive C	2800	Buda CTU	3¾x5¼	22.5	L	G	EM	PT	S	Zen	G	Pier	B.B.	DD	Spl	Op	Own	A	3	Own	Own	W	Own	½Fl	8	32	Lav	34x5	34x5	Stn	.....	3200	Op	55
Gersix M	3100	Buda ITU	4 x5½	25.6	L	C	Idl	C	F	Strm	V	Mon	B.B.	.....	Bos	.....	Cott	U	3	Bld	Tut	W	Shel	.....	7.7	31	Ros	36x3½	36x6	Jon	.....	4300	142	70
Giant 15A	2250	Cont N	3¾x5	22.5	L	T	Idl	.....	FS	Sheb	G	.....	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Math	W	Timk	½Fl	7.8	24.97	Jac	34x3½	34x5	Way	.....	3450	138	94
*Graham Brothers	1325	Dodge	3 7/16x4½	24	L	C	.....	T	FS	Stew	V	.....	Dod	D	NE	NE	Dod	U	3	Var	Det	S	Own	½	6.28	29.29	Dod	33x4½*	36x6	.....	.....	2540	140	79
Gramm-Pioneer 15	1900	Cont N	3¾x5	22.5	L	T	Own	Fin	S	Strm	G	.....	Full	DD	NE	NE	Full	U	3	Own	Per	W	Cl	D	7.6	30.4	Ros	36x3½	36x5	Bim	Fir	3800	138	90.5
Gramm-Pioneer 65	2500	Cont N	3¾x5	22.5	L	T	Own	Fin	S	Strm	G	.....	Full	DD	NE	NE	Own	A	3	Own	Per	W	Eat	½Fl	7.8	28	Ros	36x3½	36x5	Bim	Fir	4200	138	90.5
G. W. W. Farm Spec	1850	Wei	3¾x5½	22.5	H	P	Chic	.....	F	Sheb	G	.....	Full	.....	Del	Del	Full	U	3	Acm	GC	I	Cl	D	7	.....	Woh	35x5	35x5	Roy	Fir	3200	142	65
Higrade B20	2500	Cont K4	4 1/16x5¼	27.2	L	G	Per	PT	FS	Zen	V	.....	Full	DP	Eis	AL	Full	U	3	Bld	Per	W	Shel	.....	7.7	31	Lav	36x6	36x6	Det	Fir	3100	130	66
H. R. L.-R	3250	Hink HAA	4 x5¼	25.6	L	C	Fed	Fin	F	Zen	V	Hin	B-Li	DP	Bos	GD	B-Li	U	4	Spic	Shel	W	Shel	.....	7.75	30	Ros	36x4	36x7	Sch	Gdy	4560	144	.....
Hurlburt	.....	Buda IU	4 x5½	25.6	L	C	Own	.....	FS	Flch	G	Dup	B-Li	D	Eis	.....	B-Li	U	3	Spic	Per	W	Own	.....	.....	.....	Ros	34x4	34x5	Way	.....	4000	148	85
Huron-Erie	.....	Buda CTU	3¾x5¼	22.5	L	C	.....	Fin	F	Zen	V	Pier	B.B.	D	Bos	.....	Cott	U	4	Det	Det	I	Cl	D	7	36.4	Jac	35x5*	38x7*	AuW	Fir	.....	144	90
Independent G (Iowa)	2040	Cont N	3¾x5	22.5	L	C	GC	PT	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	3	Bld	GC	I	Russ	D	8.2	.....	Lav	34x3½	34x5	StM	Fir	3875	142	75
Independent F (Ohio)	2385	Cont N	3¾x5	22.5	L	G	Lng	PT	F	Strm	G	.....	Full	DP	Eis	.....	Full	U	3	Ster	Math	W	Wis	.....	8.2	33.1	Ros	36x3½	36x5	.....	.....	3400	140	85
Indiana 12	.....	Wau BUX	3¾x5¼	22.5	L	C	McC	Fin	F	Strm	G	Wau	B.B.	DP	Eis	.....	B-Li	A	3	Spic	Shel	W	Shel	½Fl	7.8	31.2	Woh	34x3½	34x5	Bim	.....	4100	134	66
International 31	1850	Own	3½x5¼	19.6	L	C	Own	Fin	FS	Ens	G	Own	Own	DP	Bos	Own	Own	A	3	Own	.....	I	Own	D	8	26.5	Own	36x3½	36x4	Own	.....	3190	128	50
Kalamazoo G-1	2495	Cont N	3¾x5	22.5	L	T	.....	C	FS	Strm	V	Pier	Full	D	Con	Dy	Full	A	..	Acm	Shel	W	Wis	½Fl	8.5	41	Ros	34x4	34x5	Bim	.....	4450	144	80
Kalamazoo G	2800	Cont J4	3¾x5	22.5	L	P	GO	PT	F	Strm	V	Mon	Full	D	Bos	Dy	Ful	A	4	Acm	Shel	W	Wis	½Fl	8.2	41	Ros	36x4	36x6	Bim	.....	5080	144	80
*Kelly-Springfield K31	2700	Own	3¾x5¼	22.5	L	C	Lng	Fin	F	Zen	G	Pier	Own	C	Eis	W	Covt	A	3	Own	Per	C	Own	D	8.6	31.58	Gem	36x3½	36x6	StM	.....	4420	Op	91
*Kelly-Springfield K34	2700	Own	3¾x5¼	22.5	L	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	W	Covt	A	3	Spic	Per	W	Shel	½Fl	8.6	31.78	Gem	36x3½	36x6	StM	.....	4670	Op	91
Kissel General Utility	1975	Own 40000	3 7/16x5½	24.1	L	C	McC	PT	S	Strm	V	Pier	W-Gr	DP	Eis	.....	W-Gr	U	3	Spic	Mat	W	Shel	½Fl	7.8	28.5	Jac	36x3½	36x5	Pru	.....	4100	152	70.5
Kleiber A	.....	Cont C4	4 1/16x5¼	27.2	L	C	Per	C	FS	Strm	G	.....	.....	WD	Bos	.....	B-Li	A	4	Spic	.....	W	Timk	¾Fl	7.1	37.51	Ros	36x3½	36x6	Smi	.....	5200	143	75
Koehler D	1995	H-Sp	3½x5	19.6	L	T	Own	PT	F	Zen	G	Sim	B-Li	D	Spl	.....	.....	U	3	.....	Math	W	Dun	½Fl	7.25	.....	Lav	34x3½	34x5	Way	.....	3600	137	70
Larrabee U	2400	Cont N¾	3¾x5	22.5	L	C	Bus	Fin	S	Sheb	G	Sim	B-Li	DD	Bos	.....	B-Li	U	3	.....	Mer	W	Shel	½Fl	7.6	25.5	Ros	34x3½	34x5	Hoo	.....	3600	138	.....
Luedinghaus W	2490	Wau BUX	3¾x5¼	22.5	L	G	Own	Pit	FS	Sheb	G	Wau	B.B.	D	Spl	.....	Det	U	3	Spic	Tut	W	Wis	½Fl	8.6	26.6	Lav	34x3½	34x5	StM	.....	4100	144	75
Maccar L	2700	Cont C4	4 1/16x5¼	27.2	L	C	Own	Fin	FS	Strm	G	Mue	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Mer	W	Timk	½Fl	8.75	46.81	Ros	36x4	36x6	Day	Fir	4800	150	66
Mack AB1½	3000	Own AB	4 x5	25.6	L	C	Own	C	S	Sheb	G	Own	Own	DD	Spl	.....	Own	U	4	Spic	Mer	C	Own	D	6.9	28.01	Own	36x4	36x3½†	.....	.....	5000	Op	68
Mack AB1½	3450	Own AB	4 x5	25.6	L	C	Own	C	S	Sheb	G	Own	Own	DD	Spl	.....	Own	U	4	Spic	Mer	R	Own	Flot	7.6	30.40	Own	36x4	36x3½†	.....	.....	5100	Op	68
Master JW	2290	Buda OU	4 1/16x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DP	Eis	.....	Full	U	3	Spic	Det	W	Timk	½Fl	Opt	Opt	Ros	34x3½	34x5	Pru	.....	3900	142	78
Master JWL	2365	Buda OU	4 1/16x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DP	Eis	.....	Full	U	3	Spic	Det	W	Timk	½Fl	Opt	Opt	Ros	34x3½	34x5	Pru	.....	3900	160	78
Master JD	2590	Buda OU	4 1/16x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DP	Eis	.....	Full	U	3	Spic	Det	W	Walk	Flot	Opt	Opt	Ros	34x3½	34x5	Walk	.....	3900	142	78
*Master JDL	2665	Buda OU	4 1/16x5½	27.2	L	C	Chic	PT	S	Mas	V	McC	Full	DP	Eis	.....	Full	U	3	Spic	Det	W	Walk	Flot	Opt	Opt	Ros	34x3½	34x5	Walk	.....	3900	160	78
Maxwell	.....	Own	3 9/16x4½	21.	L	C	Own	PT	FS	Eag	G	.....	Own	C	AtK	.....	Own	U	3	Own	.....	W	Own	½Fl	7.25	34.4	Own	35x5	35x5	Kel	Fir	2385	124	50
Menominee H	2475	Wis EAU	4 x5	25.6	L	C	Own	Fin	FS	Strm	G	Mon	Det	DP	Eis	Opt	Cott	U	3	Spic	Tut	W	Wis	½F	8.25	30.36	Ros	36x3½	36x5	Stn	Fir	4220	144	74
Moline 10	1985	Own NT	3½x5	19.6	H	C	Mod	C	F	Till	G	Phar	.....	DP	Spl	.....	Own	U	3	Arv	Math	I	Torb	D	8	38	Ros	34x5*	36x6*	.....	Fir	.....	130	.....
*Moreland EX	2800	Cont K4	4 1/16x5¼	27.2	L	C	Own	C	F	Mas	P	.....	Own	DD	Spl	.....	Own	A	4	Ther	US	W	Timk	½Fl	7	33.88	Ros	36x3½	36x7	Smi	.....	4975	126	.....
Napoleon 11	1860	Viet	3½x5	19.6	H	C	Own	PT	F	Sheb	G	.....	Full	D	Con	AL	Full	U	3	Bld	Math	I	Torb	D	8	24	Lav	35x5*	36x6*	Roy	Fir	3450	133	65
Nelson-LeMoon G2	.....	Cont K4	4 1/16x5¼	27.2	L	C	Chic	Fin	F	Strm	G	Phar	B-Li	DD	Bos	W	B-Li	U	3	Own	Tut	W	Timk	½Fl	7	.....	Lav	36x3½	36x6	Pru	Gdy	3400	Op	80
Noble B30	.....	Buda CTU	3¾x5¼	22.5	L	C	Chic	Fin	F	Strm	G	Pier	Full	DD	Eis	W	Full	U	3	M-E	Tut	W	Shel	½Fl	8.7	31.1	Lav	36x3½	36x5	Bim	Fir	4680	156	85
Norwalk	1925	Lyco K	3½x5	19.6	L	T	Stan	C	FS	Zen	V	.....	B.B.	D	Del	Dy	G-Le	U	3	UM	SPar	W	Shel	¾Fl	7.75	.....	CAS	34x3½	34x5	E&O	Fir	3200	143	75
Norwalk 35 E Special	2285	Buda CTU	3¾x5¼	22.5	L	T	Stan	C	FS	Zen	V	.....	B.B.	D	Del	Dy	G-Le	U	3	Spic	Stan	W	Shel	¾Fl	7.2	.....	Det	34x4*	34x5	E&O	Fir	3450	150	43
*Ogden D1½	.....	Cont N	3¾x5	22.5	L	T	Chic	Fin	FS	Strm	G	Pier	B-Li	DD	Spl	.....	B-Li	U	3	M-E	Tut	W	Timk	½Fl	8.75	.....	Ros	36x3½	36x5	Stn	.....	3400	136	70
O. K. 1½T	2450	Buda ITU	4 x5½	25.6	L	C	R-T	PT	FS	Zen	V	Pier	Full	DD	Eis	.....	Full	U	3	Hart	Cham	W	Wis	½Fl	8.25	24.8	Ros	36x3½	36x5	Bim	.....	4310	146	.....
Old Reliable A	2350	WisEU	4 x5	25.6	L	C	Chic	PT	F	Strm	V	Mon	Full	DD	Bos	Op	Full	U	3	Spic	Shel	W	Shel	½Fl	7.7	24.94	Ros	34x3½	36x6	StM	.....	4150	138	90
Paige 52-19	1950	HinHAA400	4 x5¼	25.6	L	C	Own	Fin	F	Strm	V	Hink	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Per	W	Timk	½Fl	7.7	37.51	Ros	34x3½	34x5	Own	Fir	4000	140	85
*Power F	3150	Hink	4 x5¼	25.6	L	C	GO	PT	F	Zen	V	Hin	Full	DD	Eis	W	Full	U	4	Arv	Row	W	Vul	F	7.75	37.2	Ros	36x6*	40x8*	StM	Fir	5300	150	69
Premocar	2350	Lyc-K	3½x5	19.6	L	T	.....	C	S	Zen	V	.....	BB	.....	Del	Dyn	G-L	U	3	Spic	Shel	W	Timk	½Fl	7	.....	Dit	36x6	36x6	.....	Fir	4200	130	70
Rainier R16	2490	Cont N	3¾x5	22.5	L	T	Har	H	FS	Zen	V	Mon	B-Li	DP	Eis	.....	B-Li	U	3	Hart	Per	W	Shel	.....	7.8	.....	Lav	34x3½	34x5	.....	Fir	3600	147	80
Reliance 10A	2400	Buda ITU	4 x5½	25.6	L	C	Bus	PT	FS	Strm	G	Pier	Full	DD	Eis	.....	Full	U	3	Pet	Shel	P	Badg	D	6.6	26.4	Ros	36x3½	36x5	Bim	Gdy	4500	150	90
Republic 11X	1795	Cont N3¾	3¾x5	22.5	L	C	Own	C	FS	Strm	G	Rug	Full	DD	Bos	.....	Full	U	3	Hart	Math	I	Torb	D	8	18.84	Jac	34x4	34x6	Nor	Fir	3400	144	.....
Rowe CW1½	3000	Wis CAU	3¾x5	22.5	L	C	Fed	H	F	Zen	G	Sim	B-Li	DD	Bos	.....	B-Li	U	4	Spic	Shel	W	Shel	½Fl	6.5	26	Ros	36x6*	36x6*	Hoo	.....	3800	133	69.1
*Rumely A	1990	Buda CTU	3¾x5¼	22.5	L	C	Mod	ZZT	F	Strm	G	Pier	Full	DD	Ber	.....	Full	U	3	Bld	Mat	W	Shel	½Fl	7.8	31.2	Gem	36x3½	36x5	Mot	Gdy	4100	144	75
*Sandow CG	1995	Cont N¾	3¾x5	22.5	L	T	.....	Fin	FS	Strm	G	.....	.....	DD	Eis	.....	Full	U	3	Spic	GC	W	Shel	.....	7.8	23	Ros	34x3½	34x5	StM	.....	3300	135	70
Schwarts BW	2600	Buda CTU	3¾x5¼	22.5	L	C	Fed	H	F	Strm	G	Mon	Full	DP	Bos	.....	Full	U	3	M-E	Row	W	Shel	½Fl	7.8	31.2	Ros	34x3½	34x6	Sch	Fir	4400	140	.....
Selden Unit 30	2250	Cont N	3¾x5	22.5	L	T	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	.....	B-Li	U	3	Spic	Per	W	Timk	½Fl	7	23.31	Lav	34x3½	34x5	Arc	.....	3560	137	57
Service 220	.....	Buda R U	3½x5½	19.6	L	T	.....	Fin	FS	Strm	V	.....	Full	DD	Eis	.....	Full	U	3	Arv	Shel	W	Timk	½Fl	7.75	23.25	Ros	34x3½	34x5	Bim	.....	3450	137	65
Signal H	2450	Cont C4	4 1/16x5¼	27.2	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Timk	½Fl	7.75	31	Ros	34x4	36x6	St.M	.....	4760	146	66
Southern 15	2590	Cont N	3¾x5	22.5	L	T	R-T	PT	S	Zen	G	Pier	Full	DD	Bos	.....	Full	U	3	.....	Shel	W	Shel	.....	.....	.....	Ros	36x6	38x7	.....	.....	.....	144	70
*Standard 1K	1600	Cont N	3¾x5	22.5	L	C	Lng	Fin	F	Strm	G	Mon	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Per	W	Timk	½Fl	7.2	23.97	Ros	34x3½	34x5	.....	Opt	3466	134	71.5
Sterling 1½	2885	Ster FU	4x5¾	25.6	L	C	Own	PT	F	Zen	V	Wau	B-Li	DD	Eis	.....	B-Li	U	4	Spic	Mat	W	Timk	½Fl	7	37.45	Ros	36x3½	36x5	Pru	.....	5130	142	94
Stewart 9	1790	Cont N¾	3¾x5	22.5	L	C	Bus	PT	FS	Zen	G	.....	Full	DP	Eis	.....	Full	U	3	Hart	Det	I	Cl	D	7.6	22.8	Gem	34x3½†	34x5†	Way	Fir	3440	140	70
Stoughton B	2350	Wau BUX	3¾x5¼	22.5	L	C	Own	Fin	FS	Strm	G	Wau	B-Li	DD	Eis	.....	B-Li	U	3	Ther	Shel	W	Shel	½Fl	7.8	31.2	Lav	36x3½	36x5	Bim	Gdy	3800	140	71
Tiffin GW	2100	Cont C4	4 1/16x5¼	27.2	L	C	Own	Fin	FS	Sheb	G	Pier	Full	DD	Bos	W	Full	U	3	Pet	Kal	W	Shel	.....	7.7	23.25	Ros	36x3½	36x5	Smi	.....	3750	135	80
Tower J1½	2900	Cont C4	4 1/16x5¼	27.2	L	C	Own	PT	S	Zen	G	.....	Full	DP	Eis	.....	Full	U	3	Bld	Det	W	Timk	½Fl	7.25	29	Ros	35x5*	38x7*	Pru	Fir	4520	142	70
*Traffic-Speedboy	1695	Cont N4	3¾x5	22.5	L	T	Own	C	FS	Cart	G	.....	Covt	DP	Bos	GD	Covt	U	3	Ther	Det	I	Russ	D	6.15	22.5	Own	35x5*	35x5*	Day	Fir	3400	128	75
Transport 25	1495	Buda WU	3¾x5½	22.5	L	T	.....	.....	F	Strm	V	.....	Full	DP	Eis	.....	Full	U	3	.....	.....	.....	.....	.....	.....	.....	Jac	34x3½	34x5	.....	.....	.....	130	.....
Transport 30	1995	Cont N-3¾	3¾x5	22.5	L	T	Mod	C	FS	Strm	G	Sim	Full	DD	Eis	.....	Full	U	3	Hart	Det	I	Cl	D	7.6	30.4	Jac	36x3½	36x5	.....	Fir	3450	140	70
Traylor B	2390	Buda WU	3¾x5½	22.5	L	C	GO	Fin	F	Zen	G	Sim	Covt	DD	Spl	.....	Covt	U	3	M-E	Mer	W	Shel	½Fl	7.8	.....	Ros	34x3½	34x6	Sch	.....	4000	140	75
*Triangle A	1995	Wau BUX	3¾x5¼	22.5	L	C	Per	ZZT	FS	Strm	G	Wau	Full	DD	Eis	.....	Full	U	3	UP	Det	I	Cl	D	7.25	21	Gem	34x3½	34x6	Roy	Fir	3750	144	60
Triumph	1950	Buda MU	3¾x5½	21	L	C	Mod	PT	F	King	V	Pier	B.B.	D	Spl	.....	Cott	U	4	UP	Tut	W	Wis	½Fl	7.25	.....	Lav	36x3½	36x5	Stn	Stn	.....	132	70
Ultimate A	3200	Buda ITU	4 x5½	25.6	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Shel	W	Shel	½Fl	6.5	34.7	Ros	36x3½	36x6	Jon	Fir	4500	140	72
United A-1½	2445	Buda CTU	3¾x5¼	22.5	L	C	Mod	PT	F	Strm	G	Sim	Full	DD	Eis	Op	Full	U	3	Bld	Bea	I	Cl	D	7.6	30.4	Jac	34x3½	34x5	Pru	Fir	4000	146	70
Ursus U 40	2500	Buda CTU	3¾x5¼	22.5	L	T	.....	Fin	F	Strm	V	Pier	Full	DD	Eis	Op	Full	U	3	Opt	Shel	I	Cl	D	7.6	25.3	Lav	36x3½	36x5	Sch	.....	3800	144	85
U. S.-N.	.....	Cont N	3¾x5	22.5	L	C	Lng	Fin	FS	Strm	V	.....	Full	DD	Eis	Opt	Full	U	3	Opt	Shel	W	Cl	D	7.6	25.97	Lav	36x5*	38x7*	Sch	.....	3900	144	85
																								½Fl	7.8	30.4	Lav	36x5*	38x7*	Sch	.....	3900	144	85
																								½Fl	7.6	30.4	Jac	36x5*	38x7*	Sch	.....	3900	144	85

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Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels
2 Ton—Con'd		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23			
Superior E.	2600	Cont C2	4 1/8x5 1/4	27.2	L	A	Idl	C	F	Strm	V	Pier	Full	DD	Eis	.....	Full	U	3	Arv	Tut	I	Torb	D	8	23.2	Ros	36x4	36x6	Sch	Fir	3600	144	75
Titan 2	.....	.....	4 x5 1/2	25.6	L	C	BW	PT	F	Strm	G	Sim	B.B.	DD	Eis	.....	Cott	U	4	Pet	Shel	I	Own	D	8	42	Woh	34x4	36x7†	Bim	.....	4400	156	70
Traffic 4000C.	1595	Cont N4	3 3/4 x5	22.5	L	T	Own	C	FS	Cart	G	.....	Covt	DP	Bos	.....	Covt	U	3	Ther	Det	I	Russ	D	7	25.62	Own	34x3 1/2	34x5	Opt	Fir	3175	132	85
Transport 35	1885	Cont N	3 3/4 x5	22.5	L	T	.....	.....	FS	Strm	G	Dup	Full	DP	Eis	.....	Full	...	4	.....	.....	.....	.....	.....	.....	.....	Jac	36x3 1/2	36x6	.....	.....	.....	140	.....
Traylor C.	2850	Buda ITU	4 x5 1/2	25.6	L	P	GO	Fin	F	Zen	G	Pier	Covt	DD	Spl	.....	Covt	U	3	M-E	Mer	W	Shel	1/2 Fl	7.75	.....	Ros	36x4	36x7	Sch	.....	5100	146	75
*Triangle C.	2285	Wau BUX	3 3/4 x5 1/4	22.5	L	C	Per	ZZT	FS	Strm	G	Wau	Full	DD	Eis	.....	Full	U	3	UP	Det	I	Cl	D	9-1	27	Gem	36x4	36x7	Roy	Fir	4200	147	60
Triumph 2	2550	Buda CTU	3 3/4 x5 1/4	22.5	L	C	Mod	PT	F	Kng	V	Pier	B.B.	D	Spl	.....	Cott	U	4	UP	Tut	W	Wis	1/2 Fl	7.75	40.3	Lav	36x4	36x7	Stn	Stn	5000	144	70
Ultimate AJ.	3250	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Shel	W	Shel	1/2 Fl	6.5	34.7	Ros	35x5*	38x7*	Jon	Fir	4500	140	72
Ultimate AJL.	3300	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	U	4	Spic	Shel	W	Shel	1/2 Fl	6.5	34.7	Ros	35x5*	38x7*	Jon	Fir	4590	156	72
*Vim 22.	3150	Her C2	3 3/4 x5 1/2	22.5	L	P	McC	Fin	F	Zen	G	Dup	B-Li	D	Spl	.....	B-Li	U	4	Spic	Shel	W	Shel	.....	7.75	.....	Gem	36x4	36x6	Smi	.....	4700	142	.....
Walker-Johnson A	.....	Buda WD	3 3/4 x5 1/2	22.5	L	T	Bus	Fin	F	Zen	V	.....	Full	DD	Eis	.....	Full	U	3	Spic	SP	W	Timk	1/2 Fl	7.75	.....	Ros	34x3 1/2	34x6	Jon	.....	4150	144	65
Walter N	3750	Own FU	4 x5 3/4	25.6	L	C	Bus	PT	F	Strm	G	Wau	B-Li	D	Eis	W	B-Li	A	4	Own	.....	...	Own	Flot	7.25	36	Gem	36x4	36x7	.....	.....	5500	144	70
White 20.	3250	Own	3 3/4 x5 1/2	22.5	L	C	.....	C	FS	Own	G	.....	Own	D	.....	.....	Own	A	4	Own	.....	R	Own	1/2 Fl	.....	.....	Own	36x4	36x7	.....	Fir	4500	157	.....
*Wichita M.	2400	Wau BX	3 3/4 x5 1/4	22.5	L	C	.....	PT	F	Strm	G	Wau	Own	C	Wag	.....	B-Li	A	4	Own	Det	W	Shel	1/2 Fl	8.6	45.03	Ros	36x3 1/2	36x6	Bim	Fir	4400	144	80
*Wisconsin (Loganville)	1450	HSp	3 5/8 x5	19.6	L	T	.....	.....	FS	Strm	...	.....	.....	WP	Bos	Dy	Det	U	3	UP	Har	I	Torb	D	8.	.....	Lav	34x5*	36x6*	.....	.....	3200	136	.....
Witt Will P.	2750	Cont C4	4 1/8 x5 1/4	27.2	H	G	Mod	Opt	FS	Zen	G	Pier	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Del	W	Tim	Flot	7.75	.....	Ros	36x3 1/2	36x7	Arc	.....	5000	144	70
Wolverine J2	2640	Cont J4	3 3/4 x5	22.5	L	G	Lng	Fin	F	Strm	G	Phar	Full	DD	Eis	Bos	Full	U	3	UP	Am	I	Russ	D	8.8	35.2	Gem	34x4	34x7	Hay	Gdy	4300	148	72
Young 6.	2750	Cont K-4	4 1/8 x5 1/4	27.2	L	C	Whee	Fin	F	Sch	G	.....	B-Li	D	Eis	.....	B-Li	U	3	Spic	Math	W	Timk	Flot	.....	.....	Ros	36x4	36x7	StM	.....	4500	144	75
2 1/2 Ton																																		
Acason H.	.....	Wau CU	4 1/4 x5 3/4	30.6	L	P	Can	C	FS	Sheb	V	Wau	Det	.....	Eis	.....	Cott	A	4	Bld	Det	W	Timk	Flot	7.75	40.3	Ros	36x4	36x8	Sch	Opt	5400	150	.....
Ace 2 1/2	.....	Buda HU	4 1/4 x5 1/2	28.9	L	C	Mod	ZZT	F	Zen	V	Pier	Full	DP	Eis	W	Full	A	4	UM	Math	W	Timk	Flot	8.50	34	Ros	36x4	36.7	Day	Fir	5630	156	80
*Acme 60.	.....	Cont IK4	4 1/8 x5 1/4	27.2	L	C	GO	Fin	F	Rayf	V	Dup	B.B.	DP	Eis	DI	Cott	U	4	Bld	Det	W	Timk	Flot	9.25	48.10	Ros	36x4	36x7	Bim	.....	4830	148	49
American.	3350	Wis	4 x6	25.6	L	G	GO	Fin	F	Strm	G	Own	Det	D	Apo	.....	Cott	U	4	Acm	SP	W	Thom	Flot	8.33	.....	Ros	36x4	34x4†	.....	.....	5000	158	.....
Apex E.	2695	Buda HU	4 1/4 x5 1/2	28.9	L	C	GO	C	F	Strm	V	Dup	Full	D	Eis	Op	Full	U	3	Bld	Det	I	Torb	D	9	27	Lav	36x4	36x7	Roy	Fir	4500	150	70
*Armleder HW.	3200	Buda HTU	4 1/4 x5 1/2	28.9	L	P	Lng	Fin	S	Zen	G	Phar	B-Li	DD	Bos	W	B-Li	U	4	Spic	Math	W	Timk	Flot	9.25	49.5	Ros	36x4	36x7	StM	.....	4900	148	.....
*Armleder HW.	3200	Cont C4	4 1/8 x5 1/4	27.2	L	P	Lng	Fin	S	Zen	G	Phar	B-Li	DD	Bos	W	B-Li	U	4	Spic	Math	W	Timk	Flot	9.25	49.5	Ros	36x4	36x7	StM	.....	4900	148	.....
Atco A.	.....	Bud HU	4 1/4 x5 1/2	28.9	L	C	Chic	PT	F	Strm	G	Pier	Full	D	Eis	.....	Full	A	4	Hart	Shel	W	Wis	.....	8.7	41.6	Ros	36x4	36x7	Smi	.....	4900	150	.....
Atterbury 7CX LWB.	3275	Cont C4	4 1/8 x5 1/4	27.2	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U	4	Spic	SP	W	Timk	Flot	9.25	44.77	Gem	36x4	36x4†	Arc	Fir	5520	171	74.5
Atterbury 7CX STD.	3175	Cont C4	4 1/8 x5 1/4	27.2	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U	4	Spic	SP	W	Timk	Flot	9.25	44.77	Gem	36x4	36x4†	Arc	Fir	5360	153	74.5
Available 2 1/2	3160	Her CU3	4 x5 1/2	25.6	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	B-Li	A	4	M-E	Tut	W	Timk	Flot	7.75	40.3	Ros	36x4	36x8	Sch	.....	4750	152	75
Bell O.	2550	Buda	4 1/4 x5 1/2	28.9	L	C	Chic	PT	F	Strm	V	Dup	B.B.	DP	Eis	.....	Det	U	3	UP	Det	I	Russ	D	8	38.4	Gem	34x4	34x7	Bim	Fir	4200	146	65
Bessemer J2	.....	Cont C4	4 1/8 x5 1/4	27.2	L	C	Std	C	FS	Strm	G	Pier	B.B.	DP	Bos	.....	B-Li	A	4	Arv	Per	I	Torb	D	8	32	Ros	36x4	36x4†	Sch	Fir	4800	158	67
*Bridgeport 2 1/2 B.	2990	Buda HTU	4 1/4 x5 1/2	28.9	L	G	Own	Fin	FS	Strm	G	Pier	B.B.	D	Eis	.....	B-Li	U	4	Hart	Per	W	Timk	Flot	8.25	.....	Ros	36x4	36x4†	Jon	Fir	5500	156	70
Brinton D.	2250	Cont C4	4 1/8 x5 1/4	27.2	L	C	Chic	PT	F	Strm	G	Pier	B-Li	D	Bos	.....	B-Li	U	3	Spic	Tut	W	Timk	Flot	.....	33.6	Ros	36x4	36x6	Smi	.....	4600	150	.....
Brockway K5.	.....	Cont K4	4 1/8 x5 1/4	27.2	L	C	Bus	Fin	F	Strm	V	Phar	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Mer	W	Timk	Flot	7.75	41.5	Gem	36x4	36x8	Hoo	.....	5260	153	70
Capitol H 2 1/2	3700	WisUAU	4 1/4 x6	28.9	L	C	GO	Fin	F	Strm	G	Sim	Det	DD	Bos	.....	Cott	U	4	Spic	Sp	W	Wis	1/2 Fl	8.66	45	Ros	36x4	36x8	.....	.....	5200	156	85
Capitol K2 1/2	4250	Wis UAU	4 1/4 x6	28.9	L	C	GO	Fin	F	Strm	G	Sim	Det	DD	Bos	W	Cott	U	4	Spic	SP	W	Wis	1/2 Fl	7.25	37.7	Ros	36x6*	42x9*	.....	Fir	5100	156	85
Chicago C2 1/2	.....	Her CU3	4 x5 1/2	25.6	L	C	Brm	PT	F	Strm	G	Sim	B-Li	D	Bos	.....	B-Li	U	4	Pet	Math	W	Timk	Flot	7.75	34	Gem	36x4	36x7†	Opt	Stn	5200	156	.....
Clydesdale 65EX.	3450	Cont	4 1/8 x5 1/2	32.4	L	C	Own	PT	FS	Zen	G	Own	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Stan	W	Timk	Flot	8.5	41.1	Ross	36x4	36x4†	Smi	.....	5400	163	73
Clydesdale 65 X	3250	Cont	4 1/8 x5 1/4	27.2	L	C	Own	PT	FS	Zen	G	Own	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Stan	W	Timk	Flot	8.5	41.1	Ros	36x4	36x4†	Smi	.....	5140	163	73
Collier 22	.....	Cont C4	4 1/8 x5 1/4	27.2	T	C	Lng	PT	FS	Zen	V	Pier	Full	DP	Eis	.....	Full	U	4	UP	Math	W	Timk	Flot	8.5	40.8	Ros	36x4	36x4†	Bim	Fir	5445	165	70
Columbia G.	2335	Hink HAA	4 x5 1/4	25.6	L	C	Lng	Fin	F	Strm	V	Hink	M-E	DP	Spl	.....	Cott	A	4	Spic	Per	I	Russ	D	9.5	48.8	Own	36x4	36x7	Det	Fir	4400	148	40
Commerce 18.	2495	Cont C	4 1/8 x5 1/4	26.2	L	P	Lng	Fin	S	Zen	V	.....	B&B	DP	Eis	Bj	B-Li	U	4	Spic	Am	I	Torb	D	7	28.8	.....	36x6	40x8	.....	Fir	4150	149	90
Concord B.	3600	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Bus	PT	F	Zen	G	Mon	B-Li	DP	Eis	.....	B-Li	U	4	Spic	Per	W	Timk	Flot	9.25	37	Ros	36x4	36x8	Arc	Fir	5400	150	70
Corbitt B-22.	3000	Cont C4	4 1/8 x5 1/4	27.2	L	C	McC	Fin	FS	Strm	V	Sim	B-Li	DD	Eis	.....	B-Li	U	4	Hart	Shel	W	Shel	1/2 Fl	8.75	35	Ros	36x4	36x7	Bim	Fir	5325	152	75
Dart M.	.....	Buda HU	4 1/4 x5 1/2	28.9	L	C	Own	C	F	Zen	G	Pier	Full	DD	Eis	.....	Full	U	4	Spic	Per	W	Own	.....	8.5	40.8	Ros	36x4	36x7	Pru	.....	4800	150	80
Day Elder C.	2750	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Bus	Fin	F	Zen	G	Mon	Covt	DD	Eis	.....	Covt	U	4	Hart	IC	W	Shel	1/2 Fl	8.75	41.56	Gem	36x4	36x7	Jon	Fir	4600	150	70
*Dependable D	2650	Buda ITU	4 x5 1/2	25.6	L	C	Lng	Fin	F	Zen	V	Mon	Full	DD	Spl	AL	Full	U	3	Acm	Per	W	Wis	1/2 Fl	8.5	35.75	Ros	36x4	36x7	Bim	Fir	5300	144	70
Doane 2 1/2	4100	Wau RU	4 1/4 x5 3/4	28.9	L	C	Own	PT	S	Mas	G	Wau	B-Li	DD	Bos	.....	B-Li	U	3	Own	Own	C	Own	D	7.7	30.8	Lav	36x5	36x7	Wes	.....	5000	147	79
D-Olt C	3250	Midwest	4 1/8 x5 1/4	27.2	H	C	G-O	PT	F	Zen	G	Sim	B-Li	DD	Eis	.....	B-Li	U	3	Spic	SP	W	Timk	.....	8.5	.....	Ros	36x5	36x4†	.....	.....	.....	168	.....
Erie A2 1/2	.....	Buda ETU	4 1/4 x5 1/2	28.9	L	C	Fed	C	FS	Zen	G	Dup	Full	D	Bos	.....	Full	A	4	Spic	Per	W	Shel	1/2 Fl	8.7	41.7	Ros	36x4	36x4†	Bim	Fir	5760	150	80
Facto.	2295	Buda ETU	4 1/4 x5 1/2	28.9	L	C	Bus	PT	FS	Zen	V	Pier	Full	D	Spl	.....	Full	A	4	Spic	SP	W	Timk	Flot	7.75	33.9	Ros	36x4	36x8	Smi	Fir	5800	155	.....
Gersix K.	3500	Buda HTU	4 1/4 x5 1/2	28.9	L	C	Idl	C	F	Strm	V	Mon	B.B.	.....	Bos	.....	Cott	U	3	Bld	Tut	W	Own	.....	9.6	39	Ros	36x4	36x8	Jon	.....	5200	150	75
Giant 16.	3150	Cont C4	4 1/8 x5 1/4	27.2	L	P	Own	.....	FS	Sheb	G	Mon	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Math	W	Timk	Flot	8.8	29.09	Ros	36x4	36x7	Way	.....	4500	168	90
Giant 16.	3050	Cont C4	4 1/8 x5 1/4	27.2	L	P	Own	.....	FS	Sheb	G	Mon	B-Li	DD	Eis	.....	B-Li	U	3	Spic	Math	W	Timk	Flot	8.8	29.9	Ros	36x4	36x7	Way	.....	4500	144	90
Hall 2 1/2 Worm	.....	Cont C4	4 1/8 x5 1/4	27.2	L	P	Own	H	FS	Zen	G	Dup	B-Li	DP	Bos	.....	B-Li	U	3	Opt	Det	W	Timk	Flot	7.7	.....	Gem	36x4	36x4	Smi	.....	4825	156	.....
Harvey WFA.	2950	Buda ETU	4 1/4 x5 1/2	28.9	L	C	Own	Fin	F	Strm	G	McC	Full	DD	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	1/2 Fl	7.75	37.5	Ros	36x4	36x7	StM	.....	5900	160	78
Hendrickson N.	2690	Buda ETU	4 1/4 x5 1/2	28.9	L	C	Chic	Pt	F	Strm	G	McC	Full	D	Spl	.....	Full	A	4	Ther	Tut	W	Timk	Flot	7.7	37.2	Ros	36x4	36x7	Stn	.....	.....	Op	80
H. R. L., H.	3650	Hink HAA	4 x5 1/4	25.6	L	G	Fed	Fin	F	Zen	V	Hink	B-Li	DP	Bos	GD	B-Li	U	4	Spic	Shel	W	Shel	.....	8.75	30.	Ros	36x4	36x4†	Sch	Gdy	5310	154	.....
Hurlburt 2 1/2	.....	Buda HU	4 1/4 x5 1/2	28.9	L	C	Own	.....	F	Flch	G	Dup	B-Li	D	Eis	.....	B-Li	U	3	Spic	Per	W	Own	.....	.....	.....	Ros	36x4	36x4	Way	.....	5600	170	85
Huron-Michigan	.....	Buda ETU	4 1/4 x5 1/2	28.9	L	C	.....	Fin	F	Zen	V	Pier	B.B.	D	Bos	.....	Cott	U	4	Det	Det	I	Cl	D	8	41.6	Jac	36x6*	40x8*	AuW	Fir	.....	156	90
Independent HI (Iowa)	2940	Cont C4	4 1/8 x5 1/4	27.2	L	C	GC	PT	FS	Strm	V	.....	Full	DD	Bos	.....	Full	U	4	Bld	GC	I	Russ	D	10	.....	Lav	36x4	36x7	StM	Fir	4950	156	75
Independent H (Ohio)	3085	Cont K4	4 1/8 x5 1/4	27.2	L	C	Lng	PT	F	Strm	G	.....	Full	DP	Eis	.....	Full	U	4	Spic	Math	W	Wis	.....	9.6	39	Ros	36x4	36x8†	.....	.....	4600	148	85
Indiana 25.	.....	Own 38	4 1/8 x5 1/2	27.2	L	C	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Shel	W	Shel	1/2 Fl	7.75	41.3	Woh	36x4	36x8	Day	.....	5850	156	73
Kalamazoo H.	3275	Wis TAU	4 x6	25.6	L	P	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Full	A	4	Acm	Shel	W	Shel	1/2 Fl	8.75	42.8	Ros	36x4	36x8	Smi	.....	6200	160	80
*Kelly Springfield K35.	2900	Own	3 3/4 x5 1/4	22.5	L	C	Lng	Fin	F	Zen	G	Pier	Own	C	Eis	W	Covt	A	4	Own	Per	C	Own	D	10.6	35.11	Gem	36x4	36x4†	StM	.....	5000	Op	91
*Kelly Springfield K38.	2900	Own	3 3/4 x5 1/4	22.5	L	C	Lng	Fin	F	Zen	G	Pier	B&B	D	Eis	W	Covt	A	4	Spic	Per	W	Shel	1/2 Fl	11.6	55.1	Gem	36x4	36x4†	StM	.....	5200	Op	87
Kimball C.	3975	Wis UAU	4 1/4 x6	28.9	L	C	Flex	PT	F	Mas	V	Sim	B-Li	DP	Spl	W	B-Li	A	4	Spic	US	W	Shel	1/2 Fl	7.75	37.31	Woh	36x4	36x8	Smi	Fir	5000	Op	66
Kissel Freighter.	2875	Own 50000*	4 1/4 x5 1/2	28.9	L	C	McC	PT	S	Strm	V	Pier	W-Gr	DP	Eis	.....	W-Gr	A	4	Spic	Mat	W	Timk	Flot	8.5	42.5	Jac	36x4	36x7	Pru	.....	5100	168	74
Kleiber B.	.....	Cont E4	4 1/8 x5 1/2	32.4	L	C	RT	PT	FS	Strm	G	Sim	.....	WD	Bos	.....	B-Li	A	4	Spic	.....	W	Timk	Flot	7.75	37.51	Ros	36x5	36x8	Sm	.....	6000	160	75
Koehler M.	3175	Her	4 x5 1/4	25.6	L	G	Own	PT	F	Zen	G	Sim	B-Li	DD	Spl	.....	B-Li	A	4	Spic	Math	W	Timk	Flot	9.25	37	Lav	36x4	36x7	Way	.....	5050	162	75
Koehler MCS	3275	Her	4 x5 1/4	25.6	L	G	Own	PT	F	Zen	G	Sim	B-Li	DD	Spl	.....	B-Li	A	4	.....	Math	W	Timk	Flot	9.25	37	Lav	36x4	36x7	Way	.....	5000	150	75
Lange E	3450	Cont K4	4 1/8 x5 1/4	27.2	L	C	Own	H	F	Strm	V	.....	B-Li	DP	Bos	.....	B-Li	A	4	Spic	SP	W	Timk	Flot	9.25	40.5	Ros	36x4	36x7	Hos	Opt	5600	153	90
Larrabee K.	3200	Cont C4	4 1/8 x5 1/4	27.2	L	C	Bus	Fin	S	Sheb	G	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Opt	Mer	W	Shel	1/2 Fl	8.75	25	Ros	36x4	36x7	Hoo	.....	6700	176	.....
Mack AB 2 1/2	3400	Own A B	4 x5	25.6	L	C	Own	C	S	Sheb	G	Own	Own	D	Spl	.....	Own	U	4	Spic	Mer	C	Own	D	6.00	28.01	Own	36x4	36x4†	.....	.....	5200	Op	66

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Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N.A.C.C. Horsepower	Valve Arrang't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels
3½ Ton		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		18	19	20			21			22	23			
Acason L.	.....	Wau CU	4⅝x5¾	30.6	L	G	Can	C	FS	Sheb	V	Wau	Det	.....	Eis	.....	Cott	A 4	Bld	Det		W	Timk	Flot	8.75	48.5	Ros	36x5	36x5†	Smi	Opt	7000	180	....
Apex F.	3975	Buda YTU	4½x6	32.4	L	C	GO	C	F	Strm	V	Dup	Full	D	Eis	Opt	Full	A 4	Bld	Det		I	Torb	D	10.5	.....	Woh	36x5	36x10	Roy	Fir	6940	168	....
*Armleder KW.	4150	Buda YTU	4½x6	32.4	L	P	Own	Fin	S	Zen	G	Phar	B-Li	DD	Bos	.....	B-Li	U 4	Spic	Math		W	Timk	Flot	10.33	55.25	Ros	36x5	36x5†	StM	.....	6900	156	....
*Armleder K W.	4150	Cont E4	4½x5½	32.4	L	P	Own	Fin	S	Zen	G	Phar	B-Li	DD	Bos	.....	B-Li	U 4	Spic	Math		W	Timk	Flot	10.33	55.25	Ros	36x5	36x5†	StM	.....	6900	156	....
Atterbury 7D-LWB.	4075	Cont E4	4½x5½	32.4	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U 4	Spic	SP		W	Timk	Flot	10.3	49.85	Gem	36x5	40x5†	Arc	Fir	7270	192	76
Atterbury 7D-Standard.	3975	Cont E4	4½x5½	32.4	L	C	Own	Fin	S	Zen	G	Mon	B-Li	DD	Ber	.....	B-Li	U 4	Spic	SP		W	Timk	Flot	10.3	49.85	Gem	36x5	40x5†	Arc	Fir	6950	167	76
Autocar Y.	3950	Own Y	4¼x5½	28.9	L	C	Own	Fin	S	Strm	G	.....	Own	DP	.....	.....	Own	A 4	.....	.....		R	Own	Flot	8.7	52.2	Ros	34x5	36x10	Hoo	.....	7000	120	65
Autocar B.	4100	Own B	4¼x5½	28.9	L	C	Own	Fin	S	Strm	G	.....	Own	DP	.....	.....	Own	A 4	.....	.....		R	Own	Flot	8.7	52.2	Ros	34x5	36x10	Hoo	.....	7150	156	65
Available H3½.	4175	Her MU3	4½x5½	32.4	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	B-Li	A 4	M-E	Tut		W	Timk	Flot	10.33	49.99	Ros	36x5	40x5†	Sch	.....	6500	176	75
Belmont D.	.....	.....	4 x6	25.6	L	.....	.....	.....	.....	Zen	V	Pier	B.B.	DP	.....	.....	.....	U 4	.....	Math		.....	.....	.....	.....	.....	.....	38x7*	42x9*	.....	.....	.....	162	....
*Bridgeport 4C	3990	Buda YTU	4½x6	32.4	L	G	Own	Fin	FS	Strm	G	Pier	B.B.	D	Eis	.....	B-Li	A 4	Hart	Per		W	Eat	.....	9.25	.....	Ros	36x5	36x10	Jon	Fir	10500	170	70
Brockway R-4	.....	Cont L4	4½x5½	32.4	L	C	Bus	Fin	F	Strm	V	Phar	B-Li	DD	Eis	.....	B-Li	A 4	Spic	Mer		W	Timk	Flot	8.75	46.8	Gem	36x5	36x5†	Smi	.....	6800	164	70
Capitol M-3½.	4425	Wis UAU	4¼x6	28.9	L	C	GO	Fin	F	Strm	G	Sim	Det	DD	Bos	.....	Cott	U 4	Spic	SP		W	Wis	½Fl	9	46.8	Ros	36x5	36x10	Smi	.....	6400	168	85
Chicago C3½.	.....	Her MU3	4½x5½	32.4	L	C	Brm	PT	FS	Strm	G	Sim	B-Li	D	Bos	.....	B-Li	A 4	Pet	Math		W	Timk	Flot	9.33	50	Gem	36x5	36x10	Opt	Sta	7200	168	....
Clydesdale 90.	4100	Cont	4½x5½	32.4	L	C	Own	PT	FS	Zen	G	Own	B-Li	DD	Bos	.....	B-Li	A 4	Spic	Stan		W	Timk	Flot	10.33	55.2	Ros	36x5	40x5†	Smi	.....	7000	170	78
Dart W.	.....	Buda YTU	4½x6	32.4	L	C	Own	C	F	Zen	G	Pier	Full	DD	Eis	.....	Full	A 4	Spic	Per		W	Own	.....	8.7	52.5	Ros	36x5	36x10	Pru	.....	6740	160	75
*Day Elder F.	3150	Cont E4	4½x5½	32.4	L	C	Bus	Fin	FS	Zen	G	Mon	B-Li	DD	Eis	.....	B-Li	U 4	Hart	IC		W	Shel	½Fl	10.25	41	Gem	36x5	36x5†	Jon	Fir	5600	165	70
Dependable G 3½.	3550	Buda YTU	4½x6	32.4	L	C	Lng	Fin	F	Zen	V	Mon	Full	DD	Spl	AL	Full	A 4	Acm	Per		W	Wis	½-Fl	10	47.61	Ros	36x6	36x10	Bim	Fir	6000	160	75
Diamond T-K.	3750	Hin	4¼x5½	28.9	L	C	GO	Fin	F	Strm	V	Own	Covt	DD	Bos	.....	Covt	A 4	Spic	Math		W	Timk	Flot	8.8	44.36	Gem	36x5	36x5†	.....	.....	7250	170	....
*Dixon.	4070	Cont E4	4½x5½	32.4	L	C	GO	PT	FS	Zen	G	Pier	Full	.....	Apo	.....	Full	U 4	Hart	IC		W	Timk	Flot	Opt	Opt	Ros	36x5	36x10	Smi	.....	6650	160	68.9
Doane 3½.	5100	Wau CU	4⅝x5¾	30.6	L	C	Own	PT	F	Mas	G	Wau	B-Li	DD	Bos	.....	B-Li	U 3	Own	Own	C	Own	D		9.5	38	Lav	36x5	36x5†	Wes	.....	7000	169	79
Dorris K7.	4400	Own	4¼x5½	28.9	H	C	McC	Fin	F	Strm	G	Own	Own	DP	Bos	.....	W-Gr	A 4	Spic	Row		W	Timk	Flot	10.33	51.5	Ros	36x5	36x10	Smi	.....	6750	194	70
Duplex E.	3500	Buda TU	4¼x5½	28.9	H	P	Lng	ZZT	FS	Sheb	V	Dup	B-Li	DD	Eis	.....	B-Li	U 4	Pet	Tut		I	Own	D	8	64	Woh	36x8	36x8	Pru	.....	6075	130	60
Federal WE.	3150	Cont E4	4½x5½	32.4	L	C	Own	Fin	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A 4	Spic	Math		W	Timk	Flot	10.33	51.56	Gem	36x5	36x5†	Smi	Fir	6990	156	74.5
Garford 77D.	3750	Buda YTU	4½x6	32.4	L	C	Own	Fin	F	Strm	G	Sim	.....	DD	Spl	.....	Own	A 4	Spic	Per		W	Timk	Flot	8.7	.....	Ros	36x5	36x5†	Smi	.....	7700	162	....
Giant 17.	4150	Cont E4	4½x5½	32.4	L	P	Own	.....	B	Strm	G	Mon	.....	DD	Eis	.....	B-Li	A 4	Spic	Shel		W	Timk	Flot	10.25	49.61	Ros	36x5	36x5†	Way	.....	6800	176	70
*G. M. C. K-71A.	3950	Own	4½x6	32.4	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Opt	Own	A 7	Own	Det		W	Timk	Flot	8.75	75.2	Own	36x5	40x5†	Own	.....	7714	163	73
G.M.C. K-71B.	4050	Own	4½x6	32.4	L	B	Own	Fin	F	Mar	G	Own	Own	DD	Eis	Opt	Own	A 7	Own	Det		W	Timk	Flot	8.75	75.2	Own	36x5	40x5	Own	.....	7820	187	74
Gramm-Pioneer 75P.	4225	Hink HA200	4½x5½	32.4	L	C	Own	Fin	F	Strm	V	Hink	Own	DD	Eis	NE	Own	A 4	Own	Per		W	Shel	½Fl	9.5	45	Ros	36x6*	42x9*	Smi	.....	6800	150	91.3
Hal-Fur B.	3000	Hin HA-500	4¼x5½	28.9	L	G	GO	PT	F	Strm	V	Hin	B.B.	P	Bos	W	Own	A 4	Pet	Per		W	Timk	Flot	7.75	57.4	Gem	36x6	Opt	Smi	Fir	5000	Op	70
Hal-Fur F.	4000	Hin AA 1600	4½x5½	32.4	H	C	GO	PT	F	Strm	V	Hin	B.B.	DP	Bos	W	Own	A 4	Pet	Mer		W	Timk	Flot	10.33	72	Gem	36x5	40x10	.....	.....	6500	180	70
Hall 3½ Worm.	.....	Cont E4	4½x5½	32.4	L	T	Own	PT	FS	Zen	G	Dup	B-Li	DP	Bos	.....	B-Li	A ..	Opt	Det		W	Timk	Flot	10	.....	Gem	36x5	36x5†	Smi	.....	6825	144	....
Harvey WHA.	3950	Buda YTU	4½x6	32.4	L	C	Own	Fin	F	Strm	G	McC	Full	DD	Eis	.....	B-Li	A 4	Spic	Shel		W	Shel	½Fl	8.75	46.8	Ros	36x5	36x5†	StM	.....	7600	160	80
Hendrickson M.	3000	Buda ETU	4¼x5½	28.9	L	C	Chic	Pt	F	Strm	G	McC	Full	DD	Spl	.....	Full	A 4	Ther	Tut		W	Timk	Flot	10	49.6	Ros	36x5	36x5..	Stn	.....	.....	Op	80
Hurlburt.	.....	Buda YTU	4½x6	32.4	L	C	Own	.....	FS	Flch	G	Dup	B-Li	D	Eis	.....	B-Li	A 4	Spic	Per		W	Own	Flot	8.7	41.91	Ros	36x5	36x5	Way	.....	7400	156	....
Independent K, (Ohio)	3985	Cont L4	4½x5½	32.4	L	G	Lng	PT	FS	Strm	G	.....	Full	DP	Eis	.....	Full	U 4	Spic	Mat		W	Wis	.....	10	48	Ros	36x5	36x10†	.....	.....	5400	160	85
Indiana 35.	.....	Own 40	4⅝x5½	30.6	L	C	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	Dy	Own	A 4	Spic	Shel		W	Shel	½Fl	10.2	54.84	Woh	36x5	36x5†	Smi	.....	7050	160	75
Jackson B.	3850	Cont E4	4½x5½	32.4	L	G	Lng	Fin	FS	Strm	V	Pier	B.B.	DP	Eis	Dy	Own	A 4	Spic	Per		B	Own	Flot	9.2	43.49	Ros	36x7	36x7	.....	.....	7400	150	65
Kalamazoo K.	4000	Wis UAU	4¼x6	28.9	L	P	GO	PT	F	Strm	V	Pier	Full	D	Bos	Dy	Full	A 4	Acm	Shel		W	Shel	½Fl	10.25	49.8	Ros	36x5	36x5†	Smi	.....	7500	160	80
*Kelly-Springfield K-40.	3900	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B&B	D	Eis	W	Covt	A 4	Own	Per		C	Own	D	10.49	31.69	Gem	36x5	40x5†	StM	.....	7730	Op	93
*Kelly-Springfield K-41.	3900	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	W	Covt	A 4	Pet	Per		I	Cl	D	10	50.7	Gem	36x5	40x5†	Cla	.....	7900	Op	90
*Kelly-Springfield K-42.	3900	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	W	Covt	A 4	Pet	Per		W	Eat	½Fl	10.25	51.97	Gem	36x5	40x5†	Smi	.....	8500	Op	90
Kleiber C.	.....	Cont E4	4½x5½	32.4	L	C	RT	PT	FS	Strm	G	.....	.....	WD	Bos	.....	B-Li	A 4	Spic	.....		W	Timk	Flot	8.75	42.35	Ros	36x5	36x10	Smi	.....	7200	163	75
Koehler F.	4150	Her	4½x5½	32.4	L	G	Own	PT	F	Zen	G	Pier	B-Li	DD	Spl	.....	B-Li	A 4	Spic	Math		W	Timk	Flot	10.33	.....	Lav	36x5	36x10	Day	.....	7000	162	75
Larrabee L4.	4000	Cont L4	4½x5½	32.4	L	C	R-T	Fin	S	Sheb	G	Phar	B-Li	DD	Bos	.....	B-Li	A 4	Spic	Mer		W	Shel	½Fl	10	53.5	Ros	36x5	36x5†	Smi	.....	7660	186	....
Mack AC 3½.	4950	Own AC	5 x6	40	L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ 3	Spic	Mer	C	Own	D		8.49	27.20	Own	36x5	40x5†	.....	.....	8070	Op	65
*Master A.	3990	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A 4	Spic	Det		W	Timk	Flot	Opt	Opt	Ros	36x5	40x5†	Smi	.....	8000	158	72
Master AL.	4090	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A 4	Spic	Det		W	Timk	Flot	Opt	Opt	Ros	36x5	40x5†	Smi	.....	8200	194	72
Master E.	4290	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A 4	Spic	Det		R	Walk	Flot	Opt	Opt	Ros	36x5	40x5†	Wal	.....	8000	158	72
Master EL.	4390	Buda YTU	4½x6	32.4	L	C	Chic	PT	FS	Mas	V	Pier	B-Li	DP	Eis	.....	B-Li	A 4	Spic	Det		R	Walk	Flot	Opt	Opt	Ros	36x5	40x5†	Wal	.....	8200	194	72
Menominee G.	3800	Wis VAU	4½x6	32.4	L	C	Own	Fin	FS	Strm	G	Mon	Det	DP	Eis	Opt	Cott	A 4	Spic	Tut		W	Timk	Flot	Opt	Opt	Ros	36x5	36x10	Smi	Fir	6750	160	80
*Nelson & LeMoon G 4.	.....	Cont L4	4½x5½	32.4	L	C	Chic	Fin	F	Strm	G	Phar	B-Li	DD	Bos	W	B-Li	U 4	Own	Tut		W	Timk	Flot	8.7	42	Lav	36x5	36x5†	Pru	Gdy	6000	Op	80
Noble E70.	.....	Buda YTU	4½x6	32.4	L	C	Chic	Fin	F	Strm	G	Pier	Full	DP	Eis	W	W-Gr	A 4	M-E	Tut		W	Shel	½Fl	8.7	42	Lav	36x5	36x10	Bim	Fir	7500	182	85
*Northway B3.	4200	Own	4 x6	25.6	H	C	GO	C	F	Strm	V	Pier	Full	DP	Wag	Bj	Full	U 4	Spic	Per		W	Shel	½Fl	10	49.2	Ros	36x5	40x5†	Cla	Fir	7700	Op	72
*Ogden F 3½.	.....	Cont L4	4½x5½	32.4	L	P	Chic	Fin	F	Strm	G	Pier	B-Li	DD	Spl	.....	B-Li	A 4	M-E	Tut		W	Timk	Flot	10.33	.....	Ros	36x5	40x10	Stn	.....	7300	178	88
O.K. 3½ T.	4250	Buda YTU	4½x6	32.4	L	G	RT	PT	FS	Zen	V	Pier	Full	DD	Eis	.....	Full	A 4	Hart	Cham		W	Wis	½Fl	10	60	Ros	36x5*	36x5†	Bim	.....	6350	164	....
Old Reliable C.	4250	Wis UAU	4¼x6	28.9	L	C	Chic	PT	F	Strm	V	Mon	Full	DD	Bos	.....	Full	A 4	Spic	Shel		W	Shel	½Fl	8.75	42	Ros	34x5	36x5†	StM	.....	6650	168	75
Paige 51-18.	3145	Hin HA 200	4½x5½	32.4	L	C	Own	Fin	F	Strm	V	Sim	B-Li	DD	Bos	.....	B-Li	A 4	Spic	Per		W	Timk	Flot	10.3	50.01	Ros	36x5	36x5†	Own	Fir	7000	160	85
*Parker J20.	3950	Wis VAU	4½x6	32.4	L	C	Own	PT	F	Strm	V	Pier	B-Li	DD	Eis	W	W-Gr	A 4	Bld	Tut		W	Own	Flot	8.75	43.6	Ros	36x5	36x5†	Smi	.....	6550	160	76
Pierce Arrow W2.	4350	Own	4½x6¾	32.4	T	C	Own	Fin	F	Strm	F	Own	Own	DD	Del	Opt	Own	A 4	.....	SP		W	Own	Flot	8	49	.....	36x5	36x5†	Day	.....	8350	162	85
Power C.	4150	Hink HA	4½x5½	32.4	L	G	GO	PT	F	Zen	V	Hin	Full	DD	Eis	W	Full	A 4	Arv	Row		W	Wis	½Fl	10	48	Ros	36x5	40x10	StM	.....	7400	160	75
Rainier R-15.	4400	Cont L4	4½x5½	32.4	L	G	EM	PT	FS	Zen	V	Pier	B-Li	DP	Eis	.....	B-Li	A 4	Spic	Per		W	Tim	Flot	.....	.....	Ros	36x5	36x5†	.....	Fir	.....	170	70
Republic 20.	3095	Cont E4	4½x5½	32.4	L	C	Own	Fin	FS	Strm	G	Phar	Full	DD	Bos	.....	Full	U 4	Spic	Math		I	Torb	D	10.25	49.25	Jac	36x5	36x10	Smi	Fir	6360	165	....
*Sandow M.	3595	Cont E4	4½x5½	32.4	L	G	.....	Fin	FS	Strm	G	Mon	.....	DD	Bos	.....	B-Li	A 4	Spic	GC		W	Timk	Flot	10	42	Ros	36x5	36x5†	Pru	.....	6500	175	70
Sanford W3h.	.....	Cont E4	4½x5½	32.4	L	G	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	.....	B-Li	A 4	Spic	Per		W	Shel	½Fl	8.7	34.8	Ros	36x5	36x5†	Hoo	Fir	6750	174	75
Selden Unit 70.	3750	Cont E7	4½x5½	32.4	L	C	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	W	B-Li	A 4	Spic	Per		W	Timk	Flot	8.75	42.35	Gem	36x5	36x10	Stn	.....	7200	162	54.5
Selden Unit 51.	4350	Cont E4	4½x5½	32.4	L	C	Lng	Fin	FS	Strm	G	Pier	B-Li	D	Eis	W	B-Li	A 4	Spic	Per		W	Timk	Flot	6	32	Gem	36x6	40x8	Stn	Stn	5650	179	49
Service 71.	.....	Buda HU	4¼x5½	28.9	L	C	McC	Fin	F	Strm	V	.....	B.B.	DP	Eis	.....	B-Li	A 4	Spic	Shel		W	Timk	Flot	8.75	42.35	Ros	36x5	36x5†	Stn	.....	6930	171	70
Service 76.	.....	Buda YU	4½x6	32.4	L	C	McC	Fin	F	Strm	V	.....	B.B.	DP	Eis	.....	B-Li	A 4	Spic	Shel		W	Timk	Flot	7.8	37.75	Ros	36x5	36x5†	Stn	.....	7280	171	70
Signal M.	3675	Cont E4	4½x5½	32.4	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	A 4	Spic	Det		W	Timk	Flot	12	58.08	Ros	36x5	40x10	StM	.....	7070	168	78
*Signal ML.	3775	Cont E-4	4½x5½	32.4	L	C	McC	Fin	FS	Strm	G	Pier	B-Li	DD	Eis	.....	B-Li	A 4	Spic	Det		W	Timk	Flot	12	58.08	Ros	36x5	40x10	StM	.....	7070	204	....
*Standard 66.	3150	Cont E7	4½x5½	32.4	L	C	Lng	Fin	F	Strm	V	Mon	B-Li	DD	Eis	.....	B-Li	A 4	Spic	Per		W	Timk	Flot	10.3	49.8	Gem	36x5	36x12	.....	.....	6480	160	70
Sterling 3½.	4325	Ster DU	4½x6¾	32.4	L	C	Own	PT	F	Zen	V	Wau	H-S	WD	Eis	.....	Own	A 3	Spic	Math		W	Timk	Flot	8.75	39.5	Ros	36x5	40x5†	Pru	.....	8350	162	92
Stewart 10.	3090	Cont E7	4½x5½	32.4	L	G	Bus	PT	FS	Zen	G	Pier	Full	DP	Eis	.....	Full	U 4	Hart	Det		I	Cl	D	10	48	Ros	36x5†	36x5†	Cla	Fir	6080	165	80

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Trade Name and Model	Chassis Price	ENGINE DETAILS: Make and Model Number 4 Cylinder unless otherwise noted	Bore and Stroke	N. A. C. C. Horsepower	Valve Arrange't	How Cooled	Radiator (Make)	Radiator (Type)	Lubrication	Carburetor	Fuel Feed	Governor (Make)	Clutch (Make)	Clutch (Type)	Ignition System	Engine Starter	GEARSET: Make	Location	Speeds	Universal (Make)	Springs (Make)	REAR AXLE: Final Drive	Make	Type	Total Gear Reduction in High	Total Gear Reduction in Low	Steering Gear (Make)	TIRES, WHEELS, RIMS: *Pneumatic †Dual Front	Rear	Wheels (Make)	Rim Equipment	Chassis Weight	Wheelbase	Pr. Cent of Weight on Rear Wheels
5 Ton—Con'd		1			2	3	4	5	6	7	8	9	10	11	12	13	14	15		16	17	18	19	20			21			22	23			
Menominee J	4850	Wis RAU	4¾x6	36.1	L	C	Own	Fin	FS	Strm	G	Mon	Det	DP	Eis	Opt	Cott	A	4	Spic	Tut	W	Timk	Flot	11.6	61.43	Ros	36x6	40x12	Smi	Fir	8250	160	80
Moreland 21J	5000	Cont B2	4¾x6	36.1	L	C	Own	C	F	Mas	P	Con	Own	DD	Spl	.....	Own	A	5	Ther	US	W	Timk	Flot	10.4	62.19	Ros	36x6†	40x6†	Smi	.....	9000	168	....
Nelson & LeMoon G5	.....	Cont B2	4¾x6	36.1	L	C	Chic	Fin	F	Strm	G	Con	B-Li	DD	Bos	W	B-Li	A	4	Own	Tut	W	Timk	Flot	11.66	.....	Lav	36x6	40x6†	Pru	.....	8000	Op	80
*Ogden G 5	.....	Cont B 2	4¾x6	36.1	L	P	Chic	Fin	F	Strm	G	Con	B-Li	DD	Spl	.....	B-Li	A	4	M-E	Tut	W	Walk	.....	10.33	.....	Ros	36x6	40x12	Wal	.....	8600	175	88
Old Reliable D	5000	Wis RAU	4¾x6	36.1	L	C	Chic	PT	F	Strm	V	Mon	Own	WD	Bos	.....	B-Li	A	4	Spic	Shel	W	Shel	½ Fl	10.25	54.8	Ros	36x6	40x6	StM	.....	8400	180	80
Packard EF	4500	Own	5 x5½	40	L	C	.....	Fin	F	Own	P	Own	Own	DP	Spl	Bj	Own	A	4	Spic	.....	W	Own	Flot	10.66	49	Ros	36x6	40x6	.....	.....	9050	156	58
*Parker M20	4850	Wis RBU	5 x6	40	L	C	Own	PT	F	Strm	V	Sim	B-Li	DD	Eis	W	W-Gr	A	4	Bld	Tut	W	Own	Flot	10.25	51.1	Ros	36x6	40x6†	Smi	.....	8400	160	78
Pierce Arrow R10	4850	Own	4½x6¾	32.4	T	C	Own	Fin	F	Strm	F	Own	Own	DD	Del	Opt	Own	A	4	.....	SP	W	Own	Flot	10	61.2	.....	36x5	40x6†	Day	.....	9300	168	85
Rainier R-17	5100	Cont B-2	4¾x6	36.1	L	G	EM	Fin	F	Zen	V	Pier	B-Li	DP	.....	.....	B-Li	A	4	Spi	.....	W	Timk	Flot	.....	.....	Ros	36x6	36x36†	Smi	.....	8000	170	....
Rowe FW5	5500	Wis VAU	4½x6	32.4	L	C	Fed	H	F	Zen	G	Sim	B-Li	DP	Bos	.....	B-Li	A	4	Spic	Shel	W	Shel	½ Fl	8.7	40.7	Ros	36x6	40x6†	Hoo	.....	8300	169	75
*Sandow L	3995	Cont E4	4½x5½	32.4	L	C	.....	Fin	FS	Strm	G	Mon	.....	D	Bos	.....	B-Li	A	4	Spic	GC	W	Timk	Flot	12	46.6	Ros	36x6	40x6†	Stn	.....	7800	175	70
Sanford W50	.....	Cont E4	4½x5½	32.4	L	G	McC	Fin	F	Strm	G	Pier	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Per	W	Shel	½ Fl	10.75	52.03	Ros	36x5	40x6†	Hoo	Fir	9070	174	75
Schacht	4400	Buda YTU	4½x6	32.4	L	G	Own	PT	F	Sheb	G	Dup	B.B.	D	Bos	.....	Own	A	4	M-E	Nat	W	Own	Flot	14	66.5	Own	36x5	40x6†	StM	.....	8200	168	70
Schwartz DW8	4900	Buda YTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	DP	Bos	.....	Full	A	4	ME	Row	W	Shel	½ Fl	12	72	Ros	36x6	40x12	Smi	Fir	9000	156	....
Schwartz DW	4900	BudaYTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	DP	Bos	.....	Full	A	4	ME	Row	W	Shel	½ Fl	12	72	Ros	36x6	40x12	Smi	Fir	9000	170	....
Schwartz DWL	4900	Buda YTU	4½x6	32.4	L	C	Fed	H	F	Strm	G	Sim	Full	DP	Bos	.....	Full	A	4	ME	Row	W	Shel	½ Fl	12	72	Ros	36x6	40x12	Smi	Fir	9000	186	....
Selden Unit 90	4950	Cont B2	4¾x6	36.1	L	C	Lng	Fin	F	Strm	G	Con	Det	D	Eis	.....	B-Li	A	4	Spic	SP	W	Timk	Flot	10.25	55	Gem	36x6	40x12	Stn	.....	9650	164	56½
Service 101	.....	Buda YU	4½x6	32.4	L	C	McC	Fin	F	Strm	V	.....	B.B.	DP	Eis	.....	B-Li	A	4	Spic	Shel	W	Timk	Flot	10.25	49.6	Ros	36x6	40x6†	Stn	.....	8760	171	75
*Signal R	4400	Cont B2	4¾x6	36.1	L	C	McC	Fin	FS	Strm	G	Con	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Det	W	Timk	Flot	11.6	56.43	Ros	36x6	40x12	Smi	Gdy	9510	180	80
*Standard 5K	4400	Cont B2	4¾x6	36.1	L	C	Lng	Fin	F	Strm	V	Con	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Per	W	Timk	Flot	11.66	56.5	Gem	36x6	40x14	Day	.....	8700	164	73
Sterling 5-Worm	4950	Ster EU	5 x6¼	40	L	C	Own	PT	F	Zen	V	Wau	H-S	WD	Eis	.....	Own	A	3	Spic	Math	W	Timk	Flot	8.8	39.69	Ros	36x6	40x6†	Pru	.....	9750	168	94
Sterling 5-Chain	5500	Ster EU	5 x6¼	40	L	C	Own	PT	F	Zen	V	Wau	H-S	WD	Eis	.....	Own	A	4	UM	Math	C	Own	D	7.04	39.59	Ros	36x6	40x6†	Smi	.....	10250	174	94
†Super Truck 100	4800	Wis	4¾x6	36.1	L	C	Chic	Fin	F	Zen	G	Sim	Full	DD	Spl	.....	Full	A	4	Spic	Shel	W	Shel	½ Fl	10.25	49.2	Ros	36x5	40x6†	Smi	.....	8500	164	62
Tiffin TW	4300	Cont B2	4¾x6	36.1	L	C	Own	Fin	F	Sheb	G	Con	B.B.	DP	Bos	W	Cott	A	4	Pet	Kal	W	Shel	½ Fl	10.25	53.3	Ros	36x6	40x6†	Smi	.....	8550	168	80
*Titan 5	.....	Buda YTU	4½x6	32.4	L	C	B&W	PT	F	Strm	G	Sim	B.B	D	Eis	.....	Cott	A	4	Pet	Shel	I	Cl	D	11	59	Lav	36x5	40x12	Cla	.....	7900	156	70
Titan 6	5250	Buda YTU	4½x6	32.4	L	C	BW	ZZT	F	Strm	G	Eis	B.B.	DD	Eis	.....	Cott	A	4	Pet	Shel	I	Cla	D	11	59	Lav	36x5	40x6†	Cla	.....	9100	156	70
Transport 75	3485	Buda YTU	4½x6	32.5	L	T	.....	.....	F	Strm	G	Dup	B.B.	.....	Eis	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Jac	36x5	36x12	.....	.....	.....	170	....
Traylor F	4700	Buda YTU	4½x6	32.6	L	P	GO	Fin	F	Zen	G	Sim	B-Li	DD	Bos	.....	B-Li	A	4	Spic	Mer	W	Shel	½ Fl	10.2	.....	Ros	36x6	40x6†	Smi	.....	9000	170	75
*Ultimate D	5500	Buda BTU	5 x6½	40	L	C	Own	PT	F	Strm	G	Pier	B-Li	DD	Eis	Bos	B-Li	A	4	Spic	Shel	W	Shel	½ Fl	8.25	.....	Ros	36x6	40x12	Jon	Fir	.....	180	....
United V 5	5000	Buda YTU	4½x6	32.4	L	C	Mod	H	F	Strm	G	Sim	Full	DD	Eis	Opt	Full	A	4	Bld	Bea	I	Cl	D	12.5	75.36	Ros	36x5	40x6†	Cla	.....	9150	160	70
U. S., T	.....	Buda ATU	4¾x6½	36.1	L	C	Lng	Fin	F	Strm	V	Sim	B-Li	DD	Eis	Opt	B-Li	A	4	Opt	Shel	W	Shel	½ Fl	10.25	54.8	Lav	36x6	40x6†	Smi	.....	9700	172	90
Walter S	4850	Own DU	4½x6¼	32.4	L	C	Bus	PT	F	Strm	G	Wau	B-Li	DP	Bos	W	W-Gr	A	4	Own	Stan	R	Own	Flot	10	45	Ros	36x6	40x6†	Day	.....	8200	168	75
Ward La France 5A	4590	.....	5 x6¼	40..	L	C	Own	Fin	F	Strm	G	.....	B-Li	DP	Bos	.....	B-Li	A	4	M-E	Mer	W	Timk	Flot	8.8	47.08	Ros	36x6	40x6†	Smi	.....	9300	164	85
*White 45	4500	Own	4¼x5¾	28.9	L	C	.....	Fin	F	Own	V	Own	Own	D	.....	.....	Own	U	4	Own	.....	R	Own	Flot	.....	.....	Own	36x6	40x6†	.....	.....	8100	174	....
Wilcox F	.....	Buda	4¾x6½	36.1	L	C	.....	PT	S	Strm	V	Dup	Own	C	Bos	.....	Own	A	4	Spic	Shel	R	Walk	½ Fl	10.25	56.58	Own	36.5	40x12	Smi	.....	9000	162	80
Wilson H	4520	Own	4¾x6	36.1	L	G	Lng	PT	FS	Mar	V	Pier	B.B.	D	Eis	.....	Own	A	4	K-B	Per	W	Timk	Flot	10.25	49.6	Ros	36x6	36x6†	Smi	.....	7500	160	80
Winther 109	.....	Wis VAU	4½x6	32.4	L	G	Brm	PT	F	Mas	V	Dup	B.B.	DP	Eis	W	B-Li	A	4	Bld	Math	I	Cl	D	12	60.5	Ros	36x5	40x6†	Cla	.....	8300	162	75
Wisconsin	3500	Wau	4½x6¼	32.4	L	C	.....	PT	F	Strm	V	Wau	B-Li	DD	Bos	.....	B-Li	A	3	Spic	.....	W	Timk	Flot	9.25	.....	Lav	35x5	36x10	.....	.....	.....	148	....
5½, 6 and 7 Ton																																		
Available H7	6000	Her T3	5 x6	40	L	C	Chic	Fin	FS	Strm	V	Pier	B-Li	DD	Bos	.....	B-Li	A	4	M-E	Tut	R	Sav	½ Fl	14	74.90	Ros	36x6	40x14	Smi	.....	10300	190	75
Bartlett 70	5500	Wis RBU	5 x6	40	L	C	Chic	PT	F	Strm	V	Sim	HS	WP	Bos	.....	Cott	...	3	Hart	Shel	C	Own	D	12.25	48	Ros	36x7	40x14	Smi	.....	12000	144	83
Doane 6	6000	Wau EU	5 x6¼	40	L	C	Own	PT	S	Mas	G	Wau	B-Li	DD	Bos	.....	B-Li	U	3	Own	Own	C	Own	D	10.5	42	Lav	36x6	40x6†	Wes	.....	8500	178	79
Garford 150 A-7½	5200	Buda BTU	5 x6½	40	L	C	Own	Fin	F	Strm	G	Sim	.....	DD	Spl	.....	Own	J	4	Spic	Per	C	Own	D	11.44	.....	Ros	36x6	40x7†	.....	.....	10200	162	....
Hall 7 Chain	.....	Cont E4	4½x5½	32.5	L	C	Own	Fin	FS	Zen	G	Dup	B-Li	DP	Bos	.....	B-Li	U	..	Opt	Det	C	.....	O	12	.....	Gem	36x5	40x6†	Smi	.....	8400	144	....
*Kelly-Springfield K60	4500	Own	4½x6½	32.4	T	C	Lng	Fin	F	Zen	G	Pier	B.B.	D	Eis	Opt	Covt	A	4	Own	Per	C	Own	D	12.39	50.18	Gem	36x6	40x7†	Smi	.....	8900	Op	90
MacDonald A	5750	Buda YTU	4½x6	32.4	L	C	Own	PT	F	Strm	G	Sim	B-Li	DD	Spl	.....	B-Li	A	4	Own	Own	I	Own	D	17.5	77	Own	40x7	Opt	Opt	.....	6000	...	66
Maccar G	4950	Cont B2	4¾x6	36.1	L	C	Own	Fin	f	Zen	G	Con	B-Li	DD	Eis	.....	B-Li	A	4	Spic	Mer	W	Timk	Flot	10.2	54.57	Ros	36x5	40x6†	Smi	Fir	8750	186	74
*Mack AC6½	5750	Own AC	5 x6	40	L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	3	Spic	Mer	C	Own	D	10.50	33.70	Own	36x6	40x12	.....	.....	8672	Op	73
*Mack AC7½	6000	Own AC	5 x6	40	L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	3	Spic	Mer	C	Own	D	11.58	37.16	Own	36x7	40x7†	.....	.....	9050	Op	73
Old Reliable L	6000	Wau EU	5 x6¼	40	L	C	Chic	PT	S	Strm	G	Wau	Own	WD	Bos	.....	Own	J	4	Spic	Math	C	Own	D	10.86	54.9	Ros	36x6	40x7†	StM	.....	10240	136	78
*Schacht 7	5200	Buda YTU	4½x6	32.4	L	G	Own	PT	F	Sheb	G	Dup	B.B.	D	Bos	.....	Own	A	4	M-E	Nat	W	Own	Flot	14	66.5	Own	36x6	40x7†	St M	.....	8500	168	70
Sterling 7½-Chain	6000	Ster EU	5 x6¼	40	L	C	Own	PT	F	Zen	V	Wau	H-S	WD	Eis	.....	Own	A	10	UM	Math	C	Own	D	7.26	43.6	Ros	36x6	40x7†	Smi	.....	11000	174	94
Tiffin 6 U-W	4500	Cont B2	4¾x6	36.1	L	C	Own	Fin	F	Sheb	G	Con	B.B.	DP	Bos	W	Cott	A	4	Pet	Kal	W	Shel	½ Fl	10.25	53.3	Ros	36x6	40x12	Smi	.....	9200	168	80
Union J.W	5800	Wis RBU	5 x6	40	L	G	GO	Fin	F	Sheb	G	Dup	Full	DD	Eis	LN	Full	A	4	UP	Math	R	Walk	.....	11.5	69.0	Ros	36x6	40x14	Smi	.....	9250	193	75
Walter R	5350	Own DU	4½x6¼	32.4	L	C	Bus	PT	F	Strm	G	Wau	B-Li	D	Eis	W	War	A	4	Own	.....	.....	Own	Flot	10	50	Ros	36x6	40x7†	Day	.....	8500	168	80
Wichita S	5000	Wau DU	4½x6¼	32.4	L	G	.....	PT	F	Strm	G	Wau	Own	C	Wag	.....	Own	A	4	Own	Det	R	Own	½ Fl	14	66.3	Ros	36x6	40x6†	Smi	.....	10000	165	80
Winther 140	.....	Wis-RBU	5 x6	40	L	G	Brm	PT	F	Mas	V	Dup	B.B.	DP	Eis	W	B-Li	A	4	Bld	Math	I	Cl	D	12	60.5	Ros	36x6	40x7†	Cla	.....	9600	162	75
Gasoline Tractor-Trucks																																		
*Buffalo Six 2½	3400	Her CU3	4 x5½	25.6	L	P	Own	PT	F	Zen	V	Sim	Covt	D	Bos	Bos	Covt	...	10	Spic	Shel	W	Shel	½ Fl	8.75	150	Ros	Opt	Opt	Way	Gdy	6325	155	75
Federal Light Duty	2600	Cont C4	4½x5¼	27.2	L	C	Own	Fin	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Math	W	Timk	Flot	9.2	40.7	Gem	36x4	36x7	.....	Fir	4700	120	....
Federal Heavy Duty	3350	Cont E4	4½x5½	32.4	L	C	Own	Fin	FS	Zen	G	Phar	B.B.	DP	Eis	.....	Own	A	4	Spic	Math	W	Timk	Flot	12	59.8	Gem	36x5	36x5†	.....	Fir	6800	114	....
Fulton D	2550	H Sp 7000	3½x5	19.6	L	T	GO	H	FS	Cart	G	.....	Covt	DP	Ber	.....	Covt	...	3	UP	.....	I	Russ	D	10.2	.....	Lav	36x4	36x6	Hoo	.....	3300	110	68
Koehler MT	3275	Her	4 x5½	25.6	L	G	Own	PT	F	Zen	G	Sim	B-Li	DD	Spl	.....	B-Li	A	4	Spic	Math	W	Timk	Flot	9.25	37	Lav	36x4	36x7	Way	.....	5000	129	75
Lombard 140H.P	.....	Spec 6	5¾x7	72.7	L	C	Spec	H	F	Strm	P	.....	.....	.....	.....	.....	Spec	A	..	.....	.....	W	.....	.....	.....	.....	Spe	.....	.....	.....	.....	18000	...	90
Lombard 50 H.P	.....	Spec 4	5 x6¼	40	L	C	Spec	H	F	Strm	P	.....	.....	D	.....	.....	Spic	A	..	.....	.....	W	.....	.....	.....	.....	Spe	.....	.....	.....	.....	8000	...	85
Mack AB 5-Ton	3400	Own AB	4 x5	25.6	L	C	Own	C	S	Sheb	G	Own	Own	DD	Spl	.....	Own	UJ	4	Spic	Mer	C	Own	D	10.5	42.27	Own	36x4	36x4†	.....	.....	4940	120	....
Mack AC 7-Ton	4950	Own AC	5 x6	40	L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	3	Spic	Mer	C	Own	D	10.7	34.60	Own	36x5	40x5†	.....	.....	7670	119	....
Mack AC 10-Ton	5500	Own AC	5 x6	40	L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	3	Spic	Mer	C	Own	D	11.5	37.16	Own	36x6	40x6†	.....	.....	8250	119	....
Mack AC 13-Ton	5750	Own AC	5 x6	40	L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	3	Spic	Mer	C	Own	D	12.9	41.56	Own	36x6	40x12	.....	.....	8272	119	....
Mack AC 15-Ton	6000	Own AC	5 x6	40	L	C	Own	Fin	S	Sheb	G	Own	Own	DP	Spl	.....	Own	UJ	3	Spic	Mer	C	Own	D	14.1	45.26	Own	36x7	40x7†	.....	.....	8650	119	....
Master DDT	3390	Buda HU	4¼x5¼	28.9	L	C	Chic	PT	FS	Mas	V	McC	Full	DP	Eis	.....	Full	U	4	Spic	Det	R	Walk	Flot	Opt	Opt	Ros	34x4	36x7	Wal	.....	4500	130	76
Walter ST	4850	Own DU	4½x6¼	32.4	L	C	Bus	PT	F	Strm	G	Wau	B-Li	D	Eis	W	War	A	4	Own	.....	.....	Own	Flot	10	50	Ros	36x6	40x6†	Day	.....	7900	126	80
Watson	4050	Cont E4	4½x5½	32.4	L	P	Jam	C	FS	Strm	G	Pier	B-Li	DP	Sim	.....	B-Li	U	4	Spic	Shel	W	Timk	Flot	8.75	42.35	Gem	34x4	36x6†	M&C	.....	6600	80	37

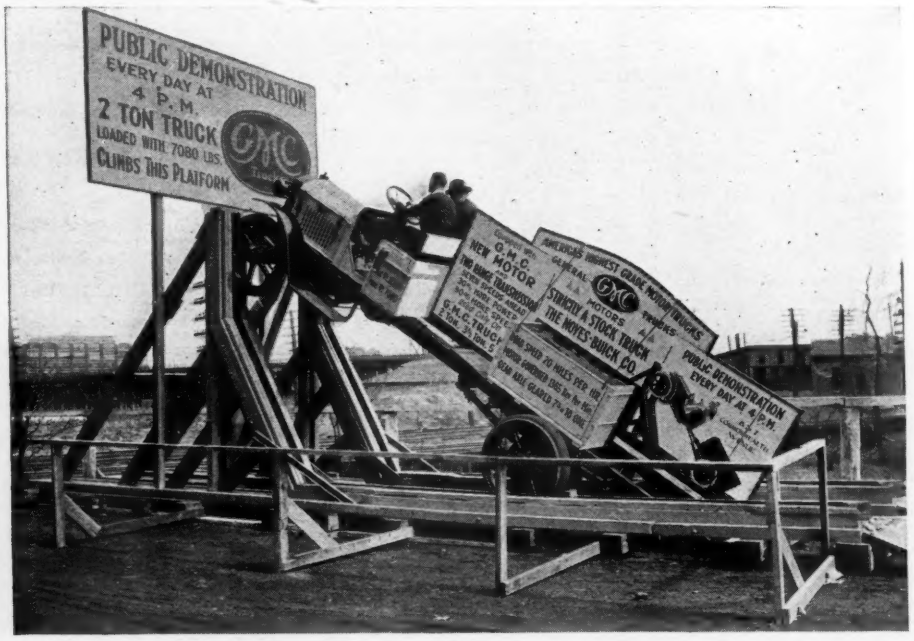
ELECTRIC COMMERCIAL CARS

E. C. M. Name and Model Number	Carrying Capacity	Chassis Weight	Chassis Price	Maximum Speed	Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Springs	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent of Weight on Rear Wheels
Atlantic 1C	2000	2770	.....	12	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x4	Ross	103	65
Atlantic 2C	4000	3590	.....	11	Opt	.....	G-E	G-E	4	C	Timk	S-El	34x4	36x3†	Ross	115	65
Atlantic 3C	7000	5220	.....	10	Opt	.....	G-E	G-E	5	C	Timk	.....	36x5	40x5†	Ross	135	65
Atlantic 5C	10000	6230	.....	9	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x5†	Ross	144	65
Atlantic 6C	13000	6940	.....	8	Opt	.....	G-E	G-E	5	C	Timk	S-El	36x6	40x6	Ross	156	65
*C-T BR2B	1000	2200	1600	14	Opt	55	G-E	Own	4	C-T	Flot	Shel	36x3	36x3½	W	100	65
C-T BR 2	2000	2400	2150	14	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x3½	36x4	W	101	60
C-T BR 2A	1500	2200	1975	14	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x3	36x3½	W	91⅝	60
C-T BR 4	4000	4000	2575	12	Opt	60	G-E	Own	4	C-T	Flot	Shel	36x4	36x4†	W	116	60
C-T AR 7	7000	5000	3550	10	Opt	50	G-E	Own	4		Dead	Shel	36x5	36x5†	W	126	60
C-T AK 7	7000	5800	3850	11	Opt	50	G-E	Own	4	I	Dead	Shel	36x6	36x4†	W	122	55
C-T AK 10	10000	6500	3960	10	Opt	50	G-E	Own	4	I	Dead	Shel	36x7	36x5†	W	132	55
Kelland	1500	1950	.....	15	Opt	60	G-E	G-E	4	R	Flot	Mer	34x3	34x3½	Ross	102	60
*Lansden BG ¾	.....	1400	1600	15	Opt	50	G-E	G-E	4	R	Flot	SP	32x4½	32x4½	Lav	90	50
*Lansden MC 1	.....	2900	1850	12	Opt	50	G-E	G-E	4	C	D	SP	36x3	36x3½	KH	108	60
*Lansden MD 2	.....	4400	2250	11	Opt	50	G-E	G-E	4	C	D	SP	36x4	36x3†	KH	120	60
*Lansden ME 3½	.....	5700	2950	10	Opt	45	G-E	G-E	4	C	D	SP	36x5	36x4†	KH	133	60
*Lansden MF 5	.....	7500	3350	9	Opt	40	G-E	G-E	4	C	D	SP	36x6	36x5†	KH	146	60
*Lansden MG 6	.....	8900	.....	7	Opt	35	G-E	G-E	4	R	D	SP	36x7	36x6†	KH	156	60
Walker K	2000	2500	.....	14	Opt	60	West	West	5	O	Own	Math	34x3½	36x4	Ross	96	66
Walker L	4000	3700	.....	13	Opt	60	West	West	5	O	Own	Math	38x4	38x6	Ross	112	66
Walker M	1000	2300	.....	15	Opt	60	West	West	5	O	Own	Math	34x3	36x3½	Ross	94	66
Walker N	10000	6300	.....	10	Opt	50	West	West	5	O	Own	Math	36x6	38x6	Ross	141	66
Walker P	7000	5300	.....	11	Opt	50	West	West	5	O	Own	Math	36x5	38x5	Ross	131	66
Walter EN	4000	4400	2900	15	Opt	50	G-E	G-E	4	O	Dead	.....	36x4	36x7	Gem	114	60
Walter EL	7000	4550	3600	13½	Opt	50	G-E	G-E	4	O	Dead	.....	36x5	36x4	Gem	130	60
Walter EA	10000	7191	4350	12	Opt	50	G-E	G-E	4	O	Dead	.....	36x6	40x6	Ros	150	60
*Ward WA 2	1250	2470	.....	12	Opt	45	G-E	Own	4	W	Shel	Shel	32x3½	34x4	Own	90	60
*Ward WA	1250	2860	.....	12	Opt	45	G-E	G-E	4	W	Shel	Shel	32x3½	34x4	Own	90	60
*Ward WB	2000	3850	.....	10.5	Opt	40	G-E	G-E	4	W	Shel	Shel	34x4	36x5	Own	102	60
*Ward WD	4000	4875	.....	9	Opt	35	G-E	G-E	4	W	Shel	Shel	36x6	36x7	Own	114	60
*Ward WF	7000	7200	.....	8	Opt	30	G-E	G-E	5	W	Shel	Shel	36x6	36x10	Own	132	70
*Ward WH	10000	9400	.....	7	Opt	26	G-E	G-E	5	W	Shel	Shel	36x7	40x12	Own	144	70
*Ward WS 2	750	1650	.....	13	Opt	45	G-E	Own	4	W	Shel	Shel	32x3	32x3½	Own	88	60

Manufacturers and Models Included in Specifications on Preceding Pages

Acason—¾, 1, 1½, 2½, 3½, 5—Acason Motor Truck Co., Wyandotte, Mich.
Ace—1½, 2½—American Motor Truck Co., Newark, Ohio.
Acme—1, 1½, 2 3, 4½, 6¼—Acme Motor Truck Co., Cadillac Mich.
Ajax—1½—Ajax Motors Corp., Boston, Mass.
Akron Multi-Truck—1¼—Thomart Motor Truck Co., Kent, Ohio.
American—2½, 4—American Motor Truck & Tractor Co., Portland, Conn.
Apex—1, 1½, 2½, 3½—Hamilton Motor Co., Grand Haven, Mich.
Armleder—1, 1½, 2½, 3½—O. Armleder Co., Cincinnati, Ohio.
Atco—1½, 2½—American Truck & Trailer Corp., Kankakee, Ill.
Atlantic—1, 2, 3, 5, 6—Atlantic Electric Vehicle Co., Newark, N. J.
Atlas—1—Atlas Truck Corp., York, Pa.
Atterbury—1½, 2½, 3½, 5—Atterbury Motor Car Co., Buffalo, N. Y.
Autocar—1½, 2, 5—Autocar Co., Ardmore, Pa.
Available—1½, 2, 2½, 3½, 5, 7—Available Truck Co., Chicago, Ill.
Avery—1—Avery Company, Peoria, Ill.
Bartlett—7—Bartlett Truck Co., Chicago, Ill.
Bell—1, 1½, 2½—Iowa Motor Truck Co., Ottumwa, Ia.
Belmont—1, 1½, 2, 3 —Belmont Motors Corp., Lewistown, Pa.
Bessemer—1, 1½, 2½, 4—Bessemer Motor Truck Co., Grove City, Pa.
Birch—1—Birch Motor Cars, Chicago, Ill.
Bridgeport—1½, 2½, 3½—Bridgeport Motor Truck Co., Bridgeport, Conn.
Brinton—1½, 2½—Brinton Motor Truck Co., Philadelphia, Pa.
Brockway—¾, 1½ 2½, 3½, 5—Brockway Motor Truck Co., Cortland, N. Y.
Buffalo—T T—Buffalo Truck & Tractor Corp., Clarence, N. Y.
C. T.—1, 1½, 2, 3½, 5—Commercial Truck Co., Philadelphia, Pa.
Capitol—1½, 2½, 3½—Capitol Motors Corp., Fall River, Mass.
Case—2—J. I. Case Plow Works Co., Racine, Wis.
Chevrolet—¾, 1—Chevrolet Motor Co. of Mich., Flint, Mich.
Chicago—1½, 2½, 3½, 5—Chicago Motor Truck, Inc., Chicago, Ill.
Climber—1½—Climber Motor Corp., Little Rock, Ark.
Clydesdale—¾, 1, 1½, 2½, 3½, 5—Clydesdale Motor Truck Co., Clyde, Ohio.
Collier—1, 1½, 2, 2½—Collier Motor Truck Co., Bellevue, Ohio.
Columbia—1½, 2½—Columbia Motor Truck & Trailer Co., Pontiac, Mich.
Commerce—1¼, 1½, 2, 2½—Commerce Motor Truck Co., Detroit, Mich.
Concord—1½, 2, 2½, 3—Abbott-Downing Truck & Body Co., Concord, N. H.
Corbitt—1, 1½, 2, 2½, 3, 4, 5—Corbitt Motor Truck Co., Henderson, N. C.
Cyclone—1½—The Cyclone Motor Corp., Greenville, S. C.
Dart—1½, 2½, 3½—Dart Truck & Tractor Corp., Waterloo, Ia.
Day-Elder—1, 1½, 2, 2½, 3½, 5—Day-Elder Motors Corp., Newark, N. J.
Dearborn—1, 1½, 2—Dearborn Truck Co., Chicago, Ill.
Defiance—1, 1½, 2—Defiance Motor Truck Co., Defiance, Ohio.
Denby—1, 1½, 2, 3, 4, 5—Denby Motor Truck Co., Detroit, Mich.
Dependable—1, 1½, 2, 2½, 3½—Dependable Truck & Tractor Co., East St. Louis, Ill.
Diamond T—1¼, 1½, 2, 3½, 5—Diamond T Motor Car Co., Chicago, Ill.
Diehl—1, 1½—Diehl Motor Truck Works, Philadelphia, Pa.
Dixon—Dixon Motor Truck Co., Altoona, Pa.
Doane—2½, 3½, 6—Doane Motor Truck Co., San Francisco, Cal.
Dodge—½—Dodge Bros., Detroit, Mich.
D-Olt—1½, 2½, 5—D-Olt Motor Truck Co., Inc., Long Island City, N. Y.
Dorris—2, 3½—Dorris Motor Car Co. St. Louis, Mo.
Dort—½—Dort Motor Car Co., Flint, Mich.
Double Drive—4—Double Drive Truck Co., Chicago, Ill.
Douglas—1½, 2, 3—Douglas Motors Corp., Omaha, Neb.
Drake—2—Drake Motor & Tire Mfg. Corp., Knoxville, Tenn.
Duplex—2, 3½—Duplex Truck Co., Lansing, Mich.
Duty—2—Duty Motor Co., Elgin, Ill.
Eagle—2—Eagle Motor Truck Corp., St. Louis, Mo.
Earl—1—Earl Motors, Inc., Jackson, Mich.
Erie—1½, 2½—Erie Motor Truck Mfg. Co., Erie, Pa.
Eugol-1—Eugol Motor Truck Co., Kenosha Wis.
F. W. D.—3—Four-Wheel Drive Auto Co., Clintonville, Wis.
Facto—2½—Facto Motor Trucks, Springfield, Mass.
Fageol—2, 3, 4, 5—Fageol Motors Co., Oakland, Cal.
Fargo—2—Fargo Motor Truck Co., Chicago, Ill.
Federal—1, 1½, 2, 3½, 5, T.T.—Federal Motor Truck Co., Detroit, Mich.
Ford—1—Ford Motor Co., Highland Park, Mich.
Forschler—1, 1½, 2, 3—Forschler Motor Truck Mfg. Co., New Orleans, La.
Front Drive—1½—Double Drive Truck Co., Chicago, Ill.
Fulton—1, 2, T.T.—Fulton Motors Corp., Farmingdale, N. Y.
G. M. C.—1, 2, 3½, 5—General Motors Truck Co., Pontiac, Mich.
G. W. W.—1½—Wilson Truck Mfg. Co., Henderson, Ia.
Garford—¼, 1¼, 2, 3½ 5, 7½—Garford Motor Truck Co., Lima, O.
Gersix—1½, 2½, 3—Gersix Mfg. Co., Seattle, Wash.
Giant—1½, 2½, 3½, 5—Giant Truck Corp., Chicago Heights, Ill.
Graham—1, 1½—Graham Brothers, Evansville, Ind.
Gramm-Bernstein—1, 1½, 2, 3, 3½, 4, 5—Gramm-Bernstein Motor Truck Co., Lima, Ohio.
Hal-Fur—2, 3½—Hal-Fur Motor Truck Co., Cleveland, Ohio.
Hall—2½, 3½, 5, 7—Lewis-Hall Motors Corp., Detroit, Mich.
Harvey—2, 2½, 3½—Harvey Motor Truck Co., Harvey, Ill.
Hendrickson—2½, 3½, 5—Hendrickson Motor Truck Co., Chicago, Ill.
Highway-Knight—4, 5—Highway Truck Corp., Chicago, Ill.
Higrade—1, 1½—Higrade Motors Co., Harbor Springs, Mich.
H. R. L.—¾, 1½, 2½—H. R. L. Motor Co., Seattle, Wash.
Hurlburt—1½, 2½, 3½, 5—Harrisburg Mfg. & Boiler Co., Harrisburg, Pa.
Huron—1½, 2½—Huron Truck Co., Bad Axe, Mich.
Independent—1½, 2½, 3½—Independent Motor Co., Youngstown, Ohio.
Independent—1, 1½, 2½—Independent Motor Truck Co., Inc., Davenport, Ia.
Indiana—1½, 2, 2½, 3½, 5—Indiana Truck Corp., Marion, Ind.
International—1, 1½, 2, 3, 5—International Harvester Co., Chicago, Ill.
Italia—2, 3, 5—Italia Motor Truck Co., San Francisco, Cal.
Jackson—3½—Jackson Motors Corp., Jackson, Mich.
Kalamazoo—1½, 2½, 3½—Kalamazoo Motor Corp., Kalamazoo, Mich.
Kearns—¾, 1½—Kearns-Dughie Motors Co., Danville, Pa.
Kelland—Kelland Motor Car Co., Newark, N. J.
Kelly-Springfield—1½, 2½, 3½, 5, 6—Kelly-Springfield Motor Truck Co., Springfield, O.

Keystone—2—Keystone Motor Truck Corp., Philadelphia, Pa.
Kimball—2, 2½, 3, 4, 5—Kimball Motor Truck Co., Los Angeles, Cal.
Kissel—1, 1½, 2½, 4, 5—Kissel Motor Car Co., Hartford, Wis.
Kleiber—1, 1½, 2, 2½, 3½, 5—Kleiber & Co., Inc., San Francisco, Cal.
Koehler—1½, 2½, 3½, T.T.—H. J. Koehler Motors Corp., Bloomfield, N. J.
Lange—2, 2½—Lange Motor Truck Co., Pittsburgh, Pa.
Lansden—¾, 1, 2, 3½, 5, 6—Lansden Company, Danbury, Conn.
Larrabee-Deyo—1½, 2½, 3½, 5—Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y.
Lombard—T.T.—Lombard Auto Tractor Truck Corp., New York, N. Y.
Luedinghaus—1, 1½, 2—Luedinghaus-Espenschied Wagon Co., St. Louis, Mo.
Luverne—2, 3,—Luverne Motor Truck Co., Scranton, Pa.
Maccar—2½, 3, 4, 5, 6—Maccar Truck Co., Scranton, Pa.
MacDonald—7—MacDonald Truck & Tractor Co., San Francisco, Cal.
Mack—1½, 2, 2½, 3½, 5, 6½, 7½, T.T.—International Motor Co., New York, N. Y.
Master—1½, 2½, 3½, 5, T.T.—Master Trucks, Inc., Chicago, Ill.
Maxwell—1½—Maxwell Motor Co., Inc., Detroit, Mich.
Menominee—1, 1½, 2, 3½, 5—Menominee Motor Truck Co., Menominee, Mich.
Moline—1½—Moline Plow Co., Moline, Ill.
Moreland—1, 1½, 2½, 4, 5—Moreland Motor Truck Co., Los Angeles, Cal.
Napoleon—¾, 1, 1½—Napoleon Motors Co., Traverse City, Mich.
Nash—1, 2—Nash Motors Co., Kenosha, Wis.
Nelson-LeMoon—1½, 2½, 3½, 5—Nelson & LeMoon, Chicago, Ill.
Netco—2, 2½—New England Truck Co., Fitchburg, Mass.
Niles—2—Niles Motor Truck Co., Pittsburgh, Pa.
Noble—1½, 2, 2½, 3½—Noble Motor Truck Co., Kendallville, Ind.
Northway—2, 3½—Northway Motors Co., Natick, Mass.
Norwalk—1, 1½—Norwalk Motor Car Co., Martinburg, W. Va.
O. K.—1½, 2½, 3½—Oklahoma Auto Mfg. Co., North Muskogee, Okla.
Ogden—¾, 1½, 2½, 3½, 5—Ogden Motor Truck Co., Chicago, Ill.
Old Reliable—1½, 2½, 3½, 5, 6—Old Reliable Motor Truck Co., Chicago, Ill.
Oldsmobile—1—Olds Motor Works, Lansing, Mich.
Olympic—2½—Olympic Motor Truck Co., Tacoma, Wash.
Oshkosh—2, 2½—Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.
Packard—2, 3, 5—Packard Motor Car Co., Detroit, Mich.
Paige—1½, 2½, 3½—Paige-Detroit Motor Car Co., Detroit, Mich.
Parker—2, 3½, 5—Parker Motor Truck Co., Milwaukee, Wis.
Patriot—1, 2, 3—Patriot Mfg. Co., Lincoln, Neb.
Pierce-Arrow—2, 3½, 5—Pierce-Arrow Motor Car Co., Buffalo, N. Y.
Pioneer—1—Pioneer Truck Co., Chicago, Ill.
Pittsburger—2½, 3½—Pittsburgh Truck Mfg. Co., Pittsburgh, Pa.
Power—1½, 3½—Power Truck & Tractor Co., St. Louis, Mo.
Premocar—1½—Preston Motors Corp., Birmingham, Ala.
Ranier—¾, 1, 1½, 2, 2½, 3½, 5—Ranier Motor Corp., New York, N. Y.
Ranger—2—Southern Motor Mfg. Ass'n, Ltd., Houston, Tex.
Reliance—1½, 2½—Reliance Motor Truck Co., Appleton, Wis.
Reo—1¼—Reo Motor Car Co., Lansing, Mich.
Republic—¾, 1, 1½, 2½, 3½—Republic Motor Truck Co., Inc., Alma, Mich.
Riker—3, 4—Locomobile Co. of America, Bridgeport, Conn.
Rowe—1½, 2, 3, 4, 5—Rowe Motor Mfg. Co., Lancaster, Pa.
Ruggles—1½, 2—Ruggles Motor Truck Co., Saginaw, Mich.
Rumely—1½—Advance-Rumely Thresher Co., Inc., La Porte, Ind.
Samson—¾, 1¼—Samson Tractor Co., Janesville, Wis.
Sandow—1, 1½, 2, 2½, 3½, 5—Sandow Motor Truck Co., Chicago, Ill.
Sanford—2½, 3½, 5—Sanford Motor Truck Co., Syracuse, N. Y.
Schacht—2, 3, 4, 5, 7—G. A. Schacht Motor Truck Co., Cincinnati, O.
Schwartz—1¼, 1½, 2½, 5—Schwartz Motor Truck Co., Reading, Pa.
Selden—1½, 2½, 3½, 5—Selden Truck Corp., Rochester, N. Y.
Service—¾, 1¼, 1½, 2, 2½, 3½, 5—Service Motor Truck Co., Wabash, Ind.
Signal—1, 1½, 2½, 3½, 5—Signal Truck Corp., Detroit, Mich.
Southern—1, 1½, 2—Southern Truck & Car Corp., Greenboro, N. C.
Standard—1½, 2½, 3½, 5—Standard Motor Truck Co., Detroit, Mich.
Sterling—1½, 2, 2½, 3½, 5, 7½—Sterling Motor Truck Co., Milwaukee, Wis.
Stewart—¾, 1, 1½, 2, 2½, 3½—Stewart Motor Corp., Buffalo, N. Y.
Stoughton—¾, 1, 1½, 2, 3—Stoughton Wagon Co., Stoughton, Wis.
Super Truck—2½, 3½, 5—O'Connell Motor Truck Co., Waukegan, Ill.
Superior—1, 2—Superior Motor Truck Co., Atlanta, Ga.
Tiffin—1½, 2½, 3½, 5, 6—Tiffin Wagon Co., Tiffin, Ohio.
Titan—2, 3½, 5, 6—Titan Truck Co., Milwaukee, Wis.
Tower—1½, 2½, 3½—Tower Motor Truck Co., Greenville, Mich.
Traffic—1½, 2, 3—Traffic Motor Truck Corp., St. Louis, Mo.
Transport—1, 1½, 2, 3, 3½, 5—Transport Truck Co., Mt. Pleasant, Mich.
Traylor—1½, 2, 3, 5—Traylor Eng. & Mfg. Co., Cornwells, Pa.
Triangle—¾, 1½, 2, 2½—Triangle Motor Truck Co., St. Johns, Mich.
Triumph—1½, 2, 2½—Triumph Truck & Tractor Co., Kansas City, Mo.
Ultimate—1½, 2, 2½, 3, 5—Vreeland Motor Co., Inc., Newark, N. J.
Union—2½, 4, 6—Union Motor Truck Co., Bay City, Mich.
United—1½, 2½, 3½, 5—United Motors Co., Grand Rapids, Mich.
Ursus—1, 1½, 2½, 3½—Ursus Motor Co., Inc., Chicago, Ill.
U. S.—1¼, 1½, 3, 4, 5—United States Motor Truck Co., Cincinnati, Ohio.
Velie—1½—Velie Motors Corp., Moline, Ill.
Vim—½, 1, 2, 3—Vim Motor Truck Co., Philadelphia, Pa.
Vulcan—2½—Vulcan Mfg. Co., Seattle, Wash.
Walker—½, 1, 2, 3½, 5—Walker Vehicle Co., Chicago, Ill.
Walker-Johnson—2, 2½—Walker-Johnson Truck Co., Woburn, Mass.
Walter—2, 2½, 3½, 5, 7—T. T. Walter Truck Co., New York, N. Y.
Ward—¼, 1, 2, 3½, 5—Ward Motor Vehicle Co., Mt. Vernon, N. Y.
Ward La France—2½, 3½, 5—Ward La France Truck Co., Inc., Elmira, N. Y.
Watson—¾, 3½, T.T.—Watson Wagon Co., Canastota, N. Y.
White—¾, 2, 3½, 5—White Co., Cleveland, Ohio.
White Hickory—1, 1½, 2½—White Hickory Motor Corp., Atlanta, Ga.
Wichita—1, 2, 3, 3½, 5½—Wichita Falls Motors Co., Wichita Falls, Tex.
Wilcox—1, 1½, 2½, 3½, 5—Wilcox Trux, Inc., Minneapolis, Minn.
Wilson—1½, 2½, 3½, 5—J. C. Wilson Co., Detroit, Mich.
Winther—1, 1½, 2, 2½, 3½, 5, 7—Winther Moter Truck Co., Kenosha, Wis.
Wisconsin (Loganville)—2, 2½—Wisconsin Truck Co., Loganville, Wis.
Wisconsin (Sauk City)—1, 1½, 2½, 3½—Wisconsin Farm Tractor Co., Sauk City, Wis.
Witt-Will—1½, 2—Witt-Will Co., Inc., Washington, D. C.
Wolverine—1, 1½, 2, 2½, 3½—American Commercial Car Co., Detroit, Mich.
Yellow Cab—¾, 1¼—Yellow Cab Mfg. Co., Chicago, Ill.
Young—1, 2, 3½—The Young Motor Truck Co., Euclid, Ohio.



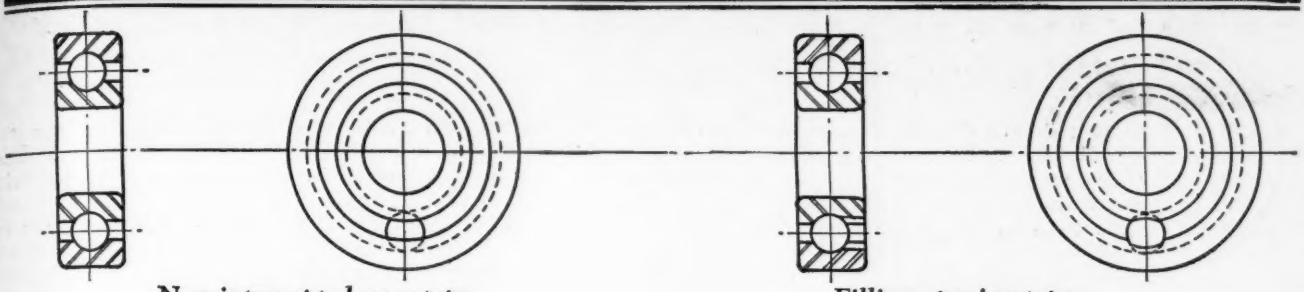
A Demonstration That Always Drew a Crowd

In order to demonstrate the new GMC motor and two-range transmission effectively, the Noyes-Buick Co., New England distributors, erected a special platform on the grounds adjacent to its headquarters in Boston, and daily gave demonstrations by running a two-ton truck loaded with 7080 lbs. up a 60 degree angle on the front wheels for a distance of six feet and perpendicularly for the remainder. The rear axle is geared 7¾ to one; the motor is governed to 1365 r.p.m. and the road speed 20 m.p.h. The new two-range transmission has seven speeds ahead.

C. T. Myers to Speak Before Pennsylvania Section, S. A. E.

Cornelius T. Myers, well-known automotive engineer, of Rahway, N. J., will present an interesting paper at the regular monthly meeting of the Pennsylvania section of the Society of Automotive Engineers, at Philadelphia, April 27, 1922, entitled "Notes on Motor Trucks." The paper will contain a discussion of various parts which have been somewhat causally treated in the present day motor vehicle discussions. It will also contain an outline of the standardization possibilities of motor truck rear axles, which subject is soon to be considered by the Axle and Wheel Division of the S. A. E. Standards Committee. The results of an extended tire mileage test, which recently has evoked very much interest, in which a very careful effort was made to obtain comparative results of solid tires when mounted under the same conditions, on wood and cast metal wheels will be discussed.

The paper has been so constructed that it may be of value to truck users as well as S. A. E. members, and an effort will be made by the local committee to have a number of owners present.



Non interrupted race type *Filling opening type*

What the Conrad Bearing Really Is

For the protection of purchasers of ball bearings we call attention to certain types which are today being offered for sale.

The Conrad Patent No. 822,723 on ball bearings is still in full effect and vigor. It has been sustained by the U. S. Courts in more than fifteen actions, the essential feature protected being, in the language of the Court of Appeals "the continuity of the sides of the grooves", or, to state it in parallel language, the uninterrupted tracks or ways.

Race cross-sections of bearings manufactured under the Conrad Patent are illustrated above.

It will be noticed that, in the filling opening type bearings made under the Conrad Patent, the notch is not ground to the full depth of the ball groove, and consequently the ball track is uninterrupted.

To evade the Conrad Patent, ball bearings are occasionally offered with a notch ground to the full depth of the ball groove or even slightly below it as illustrated below.

It is obvious that when any pressure in an axial direction is applied on these bearings, even though it is merely to stabilize a shaft endwise, there is no resistance offered to the balls when they are opposite the notch.

With six representative concerns—The Hess-Bright Manufacturing Company and the five named licensees—in the field, there can be neither necessity nor excuse for dealing with outside and infringing producers and their agents, whether foreign or domestic.

In addition to ourselves, those authorized generally to make and sell Conrad bearings are:

The Fafnir Bearing Company, of New Britain, Conn.
Gurney Ball Bearing Company, of Jamestown, N. Y.
The New Departure Manufacturing Company, of Bristol, Conn.
Standard Steel & Bearings, Incorporated, of Philadelphia, Pa.
The U. S. Ball Bearing Company, of Chicago, Ill.

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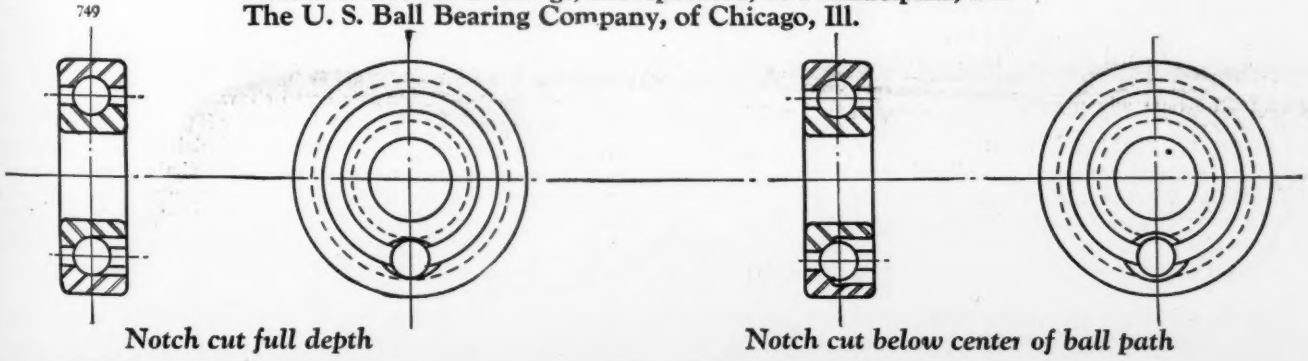


Notch cut full depth *Notch cut below center of ball path*

The Hess-Bright Manufacturing Co.
Philadelphia, Pa.

Owners of the Conrad Patent

THIS SYMBOL IN ANY ADVERTISEMENT MEANS: SEE "CHILTON AUTOMOBILE DIRECTORY" FOR COMPLETE BUYING INFORMATION

FACTS ABOUT THE CHAIN DRIVE

By G. M. BARTLETT, Chief Engineer Diamond Chain and Manufacturing Co.

DURING the past decade the devotees of the chain drive for motor trucks have watched with interest the various ingenious means that have been tried for bringing the power of the engine to the rear wheels of the vehicle in the most efficient and satisfactory manner. They have kept their ears to the ground and have noted the sound, now of the receding, now of the faltering, and now the approaching footsteps of the angel of hope. Some have weakened and have gone with the crowd, while others have adhered steadfastly to the chain drive, and have proven that by giving it a small fraction of the study that has been given to other forms of final drive, its performance has become most satisfactory.

The design of chain drives and of chain driven trucks has not remained at a standstill; nor has the design of sprocket teeth or of roller transmission chains. It is more true today than ever before that chain drive possesses the following advantages over all other types of final drives for trucks that have thus far been tried.

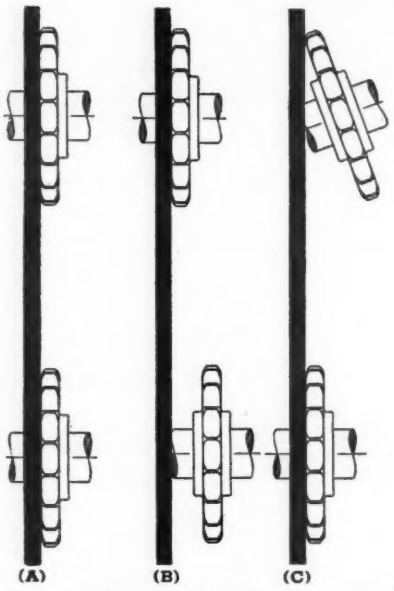
1. Greater mechanical efficiency.
2. Less unsprung weight.
3. A semi-elastic driving medium.
4. Variable wheel centers.
5. Flexibility.
6. Ease of making gear ratio changes.
7. Greater road clearance.
8. Concentration of bulk of wear in a part easily and cheaply renewed or repaired.
9. Visibility and accessibility.
10. Evidence (both audible and visual), of approaching need of repair.

The most efficient final drive is the one that delivers the greatest percentage of the engine power to the driving wheels under average driving conditions. In the course of a day's work the average truck encounters a great variety of conditions, each of which exacts particular requirements from the final drive. That drive is best which meets all of these requirements to the best advantage.

Less Unsprung Weight

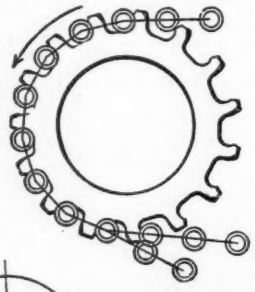
It is universally conceded by all who are familiar with the elementary principles of motor vehicle construction that it is most desirable to reduce the weight of all parts carried beneath the springs to a minimum. If this weight could be reduced to zero there would be very little tire wear.

In the chain drive the heavy differential is mounted on a jackshaft which is carried by the frame **above** the springs. There is no other successful form of final drive that relieves the rear axle of so much unsprung weight as does the chain drive. The chain drive offers the lightest construction possible for a given strength. Weight on the unsprung portion of the chassis has three times the effect upon ease of riding and shock on impact that it has on the sprung portions.



Proper and Improved Chain Installation
Sprockets must operate in the same plane. Figure (A) shows correct and (B) and (C) incorrect alignment

A semi-elastic driving medium is of great importance in protecting the engine, clutch and transmission gears from road shocks; and the closer this medium is to the source of the shocks the more effective it is. The chain, on account of its length, provides such a protecting medium, as it is capable of stretching like a powerful spring and absorbing most of the road shocks before they reach the more delicate parts of the transmission.



The chain drive permits jackshaft to be located in almost any position to accommodate the requirements of the rest of the mechanism, since there is a variety of center distances under which sprockets and chain will work well.

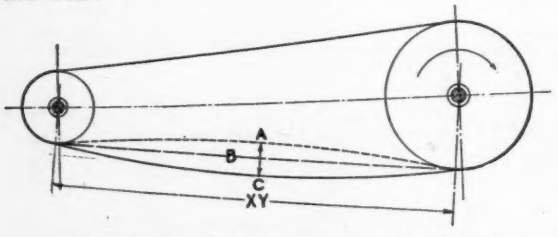
By flexibility is meant the property whereby the several parts of the drive may take different positions with respect to one another, and, within certain limits, continue to work efficiently. Bevel gears, worm gears and internal gears must be mounted on bearings with great care and accuracy. Their shafts must not be allowed to vary in their relative distances or angular relations during the life of the drive. If they do, the result will be rapid wear and great loss in efficiency. In the case of the chain drive a slight relative motion between the connected shafts does not seriously affect the efficiency or durability of the drive, although there has been a tendency to abuse the knowledge of this fact by inexcusably careless installations.

The ease with which changes in gear ratio can be made by the owner of a chain driven truck gives him an advantage of decided importance. For example, if a contractor finds that certain hauling jobs are to be done on smooth well paved roads with gentle grades, he finds it greatly to his advantage to use a moderate reduction which gives higher speed and greater economy. If on the other hand his trucks are to work on rough, hilly, country roads, or in gravel pits, he will get greater traction with less wear and tear on his transmission, and will use less gasoline, if he changes to a higher reduction. In a chain driven truck, this change can be made with very little trouble by changing the front sprockets and adding or taking out a few chain links. These parts are among the most accessible of all parts on the truck, and the change is a matter of a few minutes.

Concentration of Bulk of Wear

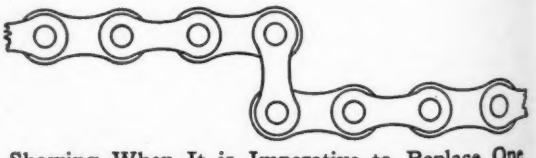
Chain driven motor trucks are usually so constructed that the first thing to give away or to show wear is the chain. This is not because of the intrinsic weakness of this form of drive, but because the adaptability of the chain drive is such that it can and does assume the role of the "goat." It takes all the twists and turns and jerks of bad roads and irregular driving conditions, and by so doing it spends itself to save the more delicate and expensive parts which are not easily accessible or quickly repaired. Hence it is the first part to show the need of repair.

The visibility and accessibility of the chain drive is a most important advantage,



How to Determine Correct Chain Slack
A. Top position of chain. C. Bottom position of chain. B. Straight line between sprockets. Example: If X-Y is four feet, A-C should equal two to four inches

Above: When Teeth of the Sprockets Wear Hook-shaped They Prevent Proper Meshing of Chain and Should be Replaced.



Showing When It is Imperative to Replace One Inside and One Outside Link With an Offset Link

since it alone of all parts of the transmission gives evidence, both to the eye and car of approaching need of repair.

The speed at which the driving sprocket should be run is about 325 r.p.m. as the maximum for a 2-in. pitch chain, 375 r.p.m. for a 1¾-in. pitch, 500 for 1½-in. pitch, and 625 for 1¼-in. pitch. In motor truck design there is seldom a tendency to exceed these speeds.

Chains should not be selected with reference to their breaking strength, as the breaking strength of standard heavy series chains is many times greater than the advisable working load.

Trucks should neither be under-chained nor over-chained. If heavier chain is used than is needed for the service to be performed, both chain and sprockets will show more rapid wear than when a lighter chain is used. This wear is due to impact between the chain lines and sprocket teeth and to the inability of the drive to respond with sufficient rapidity to the irregularities in load due to road shocks. The following sizes are recommended:

1 ton capacity—¾ in. P. x ½ in., or 1 in. P. x ⅝ in. chain.

1½ to 2 tons—1 in. P. x ⅝ in., or 1¼ in. P. x ¾ in. chain.

2½ to 3 tons—1¼ in. P. x ¾ in., or 1½ in. P. x 1 in. chain.

3½ to 4½ tons—1½ in. P. x 1 in., or 1¾ in. P. x 1 in. chain.

5 to 6 tons—1¾ in. P. x 1 in., or 2 in. P. x 1¼ in. chain.

6½ to 8 tons—2 in. P. x 1¼ in. chain.

The speed reduction in the chain drive should not be so great as to necessitate the use of too few teeth on the front sprocket. Use from 14 to 20 teeth if possible. Large sprockets bend the chain links through a smaller angle and consequently cause less wear on rollers, bushings and pins. Also in the larger sprockets the load is distributed among a greater number of teeth, and the action is softer.

During the past seven or eight years great progress has been made in the design of sprocket teeth. The tooth form recently adopted as standard by the S. A. E., the A. S. M. E., the A. G. M. A., and the chain manufacturers of the United States, is a decided improvement over the old style tooth so long in use. It produces softer and quieter action with less tendency to wear the teeth hook shaped, and distributes the load over a larger number of teeth.

The driving sprocket should always be hardened, as it gets the most severe wear. By preventing rapid wear on this sprocket, a longer life is secured for the chain. Before hardening, however, all sharp edges should be removed from the teeth, as these may lacerate the side plates of the chain to a considerable extent before they are worn off.

The center distance between the two sprockets may vary to a considerable extent, but it should not be less than the diameter of the larger sprocket. A good average is such as would make the total chain length about 75 times the pitch.

Radius rods should push directly on the frame and not on the jackshaft.

The use of a flexible frame and flat springs assists in reducing the wear on chains and sprockets, since it adapts itself better to uneven roads and reduces the amount of misalignment of the sprockets.

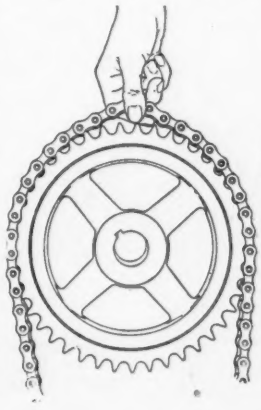
Care of Chain Drives

Chain drives are said to be noisy. It is true that they are audible, but when the sound emitted becomes such that it can properly be called a "noise," it is a sign that the chains or sprockets are either badly worn or that they need to be lubricated. A drive that will stand as much abuse as a chain drive is often subjected to, is surely justified in crying out when conditions get so bad that it is decidedly to the interest of its owner to give about: **first,** the lubricant reduces the frictional wear between the moving parts, increasing the efficiency of the drive and lengthening its life; **secondly,** it forms a cushion which prevents a metal to metal contact and minimizes the effect of it a little attention.

In every joint of a chain there are spaces between the working parts, such as spaces between the pins and bushings, between the bushings and rollers, between the roller links and pin plates, and between the rollers and inside plates. If these spaces are filled with a lubricant three desirable conditions are brought shocks and impacts due to load and speed; **thirdly,** it quiets the action to such an extent as to remove all objections on the basis of noisiness.

Chains are usually lubricated before leaving the factory by soaking them in hot grease which penetrates into all working parts. In addition to this the chains should be well lubricated from time to time. Dirt and grit will cling to a greasy chain more tenaciously than to a dry one, and will settle around the open spaces ready to be pushed in by the first innocent operator who thinks to lubricate his chain by daubing more grease on the outside. Chains that are run in places where they accumulate dust and grit can only be properly lubricated by removing them, cleaning them thoroughly in a bath of gasoline or kerosene, then drying and placing in a bath of lubricating grease heated to about 140 to 170 degrees, where it should be left until the inner working parts of the chain have been heated sufficiently to allow the grease to flow into all parts and fill the spaces.

The alignment of the sprockets on a motor vehicle should be given careful attention. Unfair advantage is often taken of the fact that sprockets will work if not in perfect alignment, but to get the longest life, the quietest action, and the greatest efficiency sprockets should be so placed that their mean position under running conditions is the best possible.



Another Indication of Chain Elongation is Made Apparent by the Test Shown Herewith.

Truck chains should never be run with both strands tight. The amount of sag in the slack should be between ¼ in. and ½ in. per foot of span—that is, if the middle of the chain is drawn down as far as it will go, and then up as far as it will go; the distance between these two points should be from ½ in. to 1 in. per foot.

Driving conditions affect the life of a chain drive to a great extent. Where the service brake is located on the jackshaft its careless use may produce severe shocks on the chain, since the load is suddenly shifted from one strand of the chain to another, and the back-lash being suddenly taken up, the full load is thrown upon that side of the chain.

As to replacements, if part of a roller link is damaged a complete new link should replace the old one. If the chain has worn out and needs replacement, make sure that the sprocket teeth are in good condition. If not, renew the sprocket also, for an old sprocket with badly hooked teeth can quickly wreck a new chain.

Trouble finding. Following is a list of twenty defects, any one of which might be the cause of an unsatisfactory drive:

Troubles due to bad design:

(1) Is the chain heavy enough for the load and light enough for the speed?
(2) Have the sprockets a sufficient number of teeth?
(3) Is the center distance too short or too long?
(4) Are the front sprockets soft?

Troubles due to bad workmanship:

(5) Is the bottom diameter of the sprocket too large or too small?
(6) Are the teeth too thick?
(7) Is there clearance between the side plates of the chain and the rim or hub of the sprocket?
(8) If the sprockets are hardened, are there sharp burrs on the edges of the teeth which cut the inside plates of the chain?
(9) Are the teeth properly chamfered?

Troubles due to bad installation:

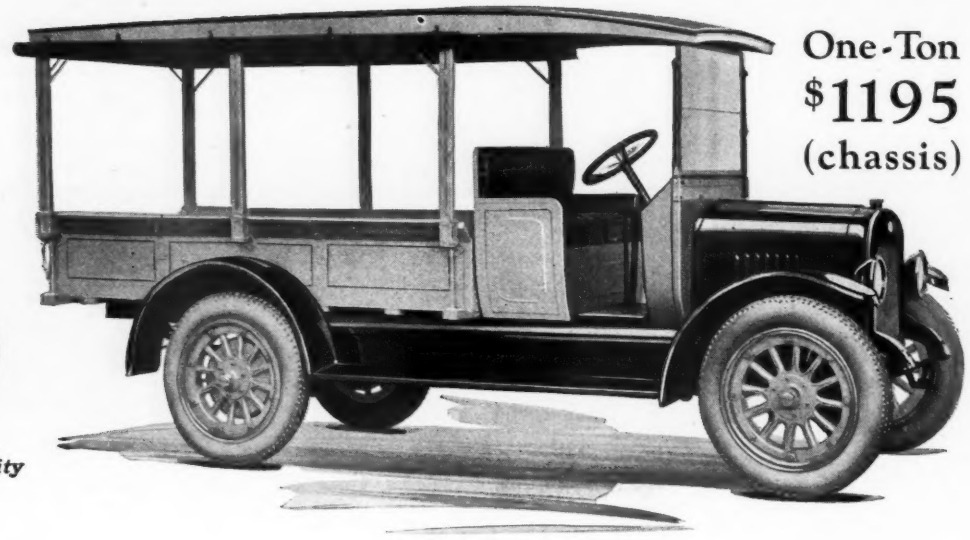
(10) Are the sprockets in bad alignment and are they interfering with the side plates?
(11) Is the chain too tight or too slack?

Troubles due to wear, neglect or abuse:

(12) Are the sprocket teeth badly worn or hooked?
(13) Has the chain elongated too much?
(14) Have some sections of the chain elongated more than others?
(15) Are any of the joints in the chain stiff or tight?
(16) Are there any broken rollers?
(17) Loose bushings?
(18) Loose pins?
(19) Has the chain been properly lubricated?
(20) Has a new chain been placed on a badly worn sprocket?

The above troubles are all easily prevented or remedied, and there is just one general rule that need be emphasized for the prevention of chain drive troubles: COMMON SENSE.

RUGGLES



One-Ton
$1195
(chassis)

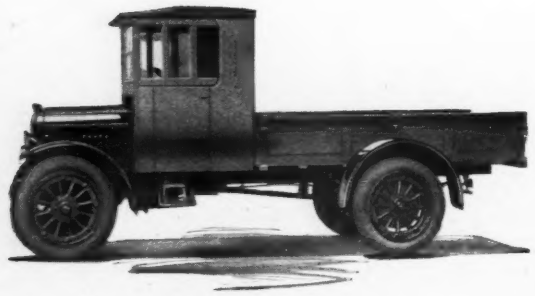
This Emblem Stands for Quality

65 New Dealers in Four Months

Each month more business men are closing territory for *The World's Greatest Truck Value.* These men sense the outstanding selling advantages of Ruggles Trucks.

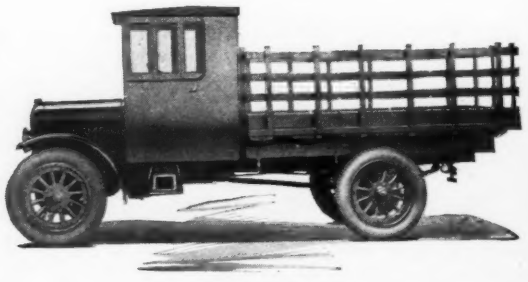
They are equipping themselves for the increased truck demand that is surely coming. The business world thinks more of value than it has thought for years. It demands trucks that combine high quality and low price. Only in the Ruggles is this demand effectively fulfilled.

Now Ready— Complete Ruggles literature: One-Ton folder, Two-Ton folder, "The Men Behind Ruggles Trucks," "Sound Sense from Saginaw," "What Sold Him," and other data.



ONE-TON—

Express Body and Combination Cab. All-around equipment for everyday use in many vocations, especially quick-delivery field. Cab can be fully enclosed, or doors removed in summer.



ONE-TON—

Stake Body and Cab. The Ruggles 5 x 9 stake body with 30-inch stakes. Load fully enclosed, adapting it for hauling milk cans, cases and other bulky loads. Rear and side racks easily removed.

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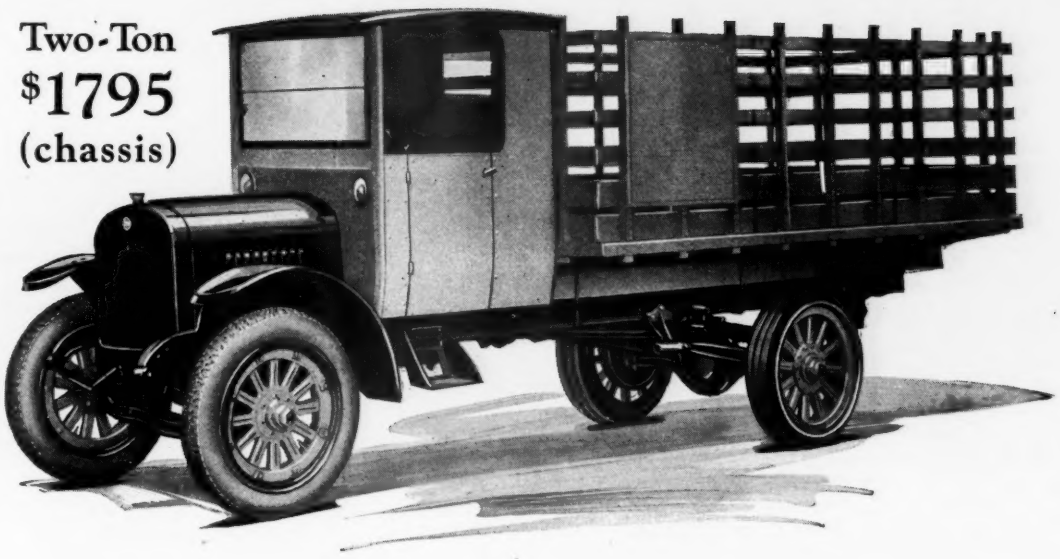
TRUCKS

Two-Ton
$1795
(chassis)



And Just Recently These—

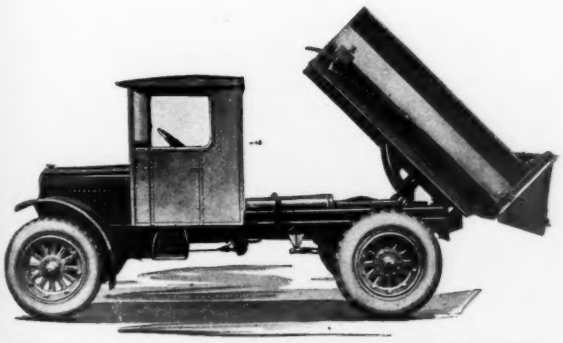
Within the past few weeks business men have taken Ruggles franchises in the following localities: Pittsburgh, Wilkes-Barre, Providence, Worcester, Taunton, Hartford, Columbus, Cincinnati, New Orleans, Charlotteville, Lynchburg, Charlotte, Knoxville, Memphis, Terre Haute, Peoria, Des Moines, Denver, Salt Lake City, San Francisco, Los Angeles.

The Ruggles Truck is securing in a few months a national distribution that usually requires years. This is the highest compliment to the mechanical worth of the truck and the sound merchandising plan that is behind it.

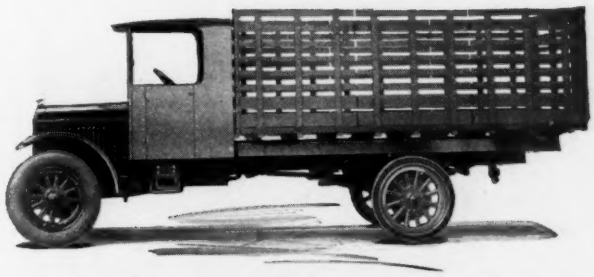
Other towns are rapidly closing. The unusual value of the truck and the remarkable features of the selling plan are securing quick distribution. Your territory may still be open—write or wire for the Ruggles merchandising plan.

RUGGLES MOTOR TRUCK COMPANY, Saginaw, Michigan

Canadian Factory: Ruggles Motor Truck Company, Ltd., London, Ont.



Ruggles Two-Ton Truck equipped with horizontal hydraulic hoist and two-yard dump body for the efficient handling of coal, dirt, gravel and similar material.



Ruggles Two-Ton Truck with special stock rack body for hauling live stock, crated merchandise and other bulky objects. Sliding end gate a feature of this body.

THIS SYMBOL IN ANY ADVERTISEMENT MEANS: SEE "CHILTON AUTOMOBILE DIRECTORY" FOR COMPLETE BUYING INFORMATION

Activities of the Motor Truck Association of Philadelphia

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THE COMMERCIAL CAR JOURNAL OFFICIAL ORGAN

THE regular monthly meeting of the Philadelphia Motor Truck Association held on the roof garden of the Adelphia Hotel, March 15th, with the exception of a few preliminary minutes of business, was given over entirely to a night of entertainment and jollification. Although two days previous, this St. Patrick Day's celebration was typically in order and was represented by a very large attendance, some 150 members.

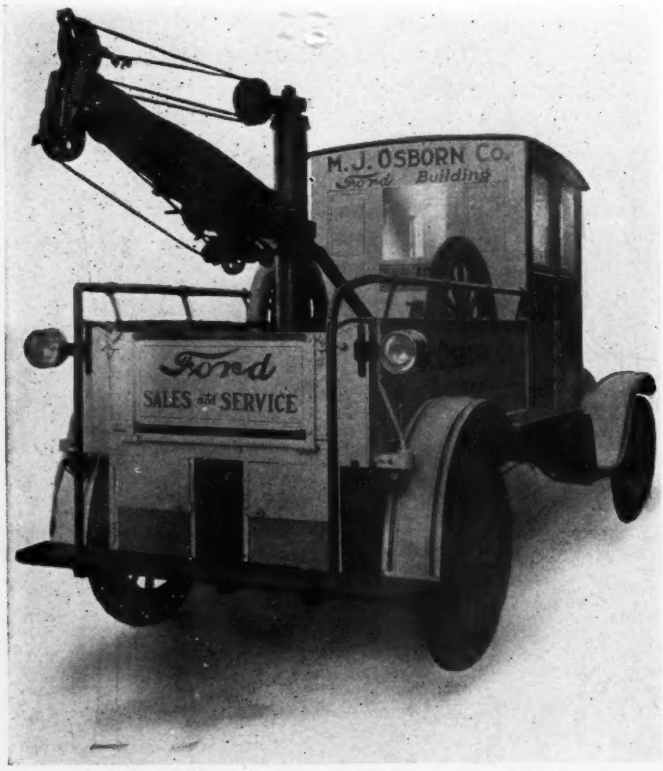
In keeping with the present movement to insist upon recognition of the economical, industrial, educational, business and residential advantages of Philadelphia, the association unanimously passed a resolution placing it on record as approving the present campaign of boosting Phila.

Hon. J. Washington Logue, of Philadelphia, gave a thrilling and patriotic talk on Americanism. A rising vote of appreciation indicated the extreme warmth with which his address was received by the association. The remaining portion of the evening was given over to Author Bittong, conductor of entertainment, who ably extricated himself from the responsibility of explaining the absence of additional professional talent by burlesquing earlier happenings of the evening.

Special Service Wrecking Body

The Schurmeier Whitney Co., 425 N. 5th St., St. Paul-Minneapolis, Minn., is manufacturing a special service wrecking body with fully enclosed cab for mounting on any make chassis that should be of particular interest to every dealer not operating a service truck. A completely equipped service truck that also possesses attractive appearance not only facilitates prompt service, but promotes good will and prestige as well.

This body, illustrated herewith, is of hardwood construction throughout with all-season cowl cab, drop windows and rain vision windshield, special upholstered spring cushions, etc. A rear platform step is provided extending from fender to fender, together with running boards on each side. Hand rails run full length of body from cab to rear step. Emergency folding seats are provided inside of the body and racks for carrying tools and spare wheels. Two tool boxes with swinging doors are placed under rear of body between which is a tow bar. Wrecking lamps are at each side and at rear of body. The equipment includes a Sasgen service truck derrick. The dimensions of the loading space of body for the one-ton size are usually 45 in. wide inside, 84 in. long and 16 in. deep, and drop-tail gate 28 in. wide. Price complete for one ton size, except for derrick, $262.



The Schurmeier Whitney Co. Construct Special Service Wagons Such as This for Mounting on Any Make Chassis

Selden to Merchandise Transportation

Proper installation of each and every truck chassis is the main object of the Selden Truck Corporation, Rochester, New York, in its new truck-rating system. In bringing forth this new method of rating, which will take into consideration road conditions, the maximum load to be handled at any time, the average weight to be handled, the grades on which the truck is to be operated and other vital factors entering into the determining of the capacity, chassis most economical for any particular service, Selden representatives and dealers will be obliged to assume responsibilities which are of no small proportions.

Realization of the need of affording greater economy to the user was what prompted this company to inconveniently depart from the conventional mode of rating. Careful consideration of delivery costs by a thorough analysis of operating conditions and then the proper selection of a chassis best fitted to meet the demands, is the task this company and its dealers has taken upon themselves to fulfill. It goes without saying that a chassis improperly applied will result in dissatisfied users, make the satisfactory operation of the chassis impossible, and in the end not only ruin the dealer's reputation for the product, but place the dealer in a position where he will be forced out of business by the lack of sales. The new Selden system is designed to eliminate such possibilities, as each sale is made only after it has been determined that the capacity truck decided upon will handle the work required of it most economically. Each sale carried with it an entirely different use for a truck, and instead of attempting to make a truck fit every user's needs and requirements a truck is found that will fit the individual user's needs.

Briefly, this system is the elimination of the regular model number, to be substituted by the term "unit." The company's guarantee will not be effective unless the dealer forwards an analysis form properly made out, to the factory.

Under this "unit" plan a truck is sold according to the work to which it is to be applied. For instance, take what is termed by the company as "unit" 30. Under ideal road conditions and for light-duty work, it can be sold as a light-duty 2½-ton truck. The maximum capacity is 2½ tons pay load, but under unfavorable road conditions and for heavy-duty work as a 1½-ton truck only.

The caution plate on each chassis is left blank, with respect to the capacity. When the dealer sells and delivers a chassis to the customer he fills in the capacity figures, provided he first has forwarded to the factory the form showing installation analysis.

Another advantage of this system lies in the fact that it encourages the dealer to sell his product correctly. Besides, it protects the dealer and manufacturer from the careless owner who overloads, and who has no consideration for the actual conditions under which the truck is operating.

THE COMMERCIAL CAR JOURNAL

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TABLE OF CONTENTS

	PAGE
Advertisers' Index	178
Buyers' Index of Reading and Advertising Pages	174
Commercial Car Specifications	55
Editorials	27
Metal and Rubber Markets	70
New Commercial Cars	33
News of the Trade, Including Personals, New Agencies, Factory Items, Etc.	28
Replacement Table	49
Service and Repair Department	40
Service Station Appliances	44
Truck Equipment and Appliances	38

SPECIAL ARTICLES

A Promise or an Order—Which Shall It be?	11
Do You Have to Drag the Customer Into Your Service Station?	12
How Legislation is Hampering Bus Progress in Oregon	14
High-Class Merchandising Builds Sales for Michigan Distributor	16
How Jimmy Skipped the Yellow Slip	18
Every Commodity That's a Big Seller Has Been Consistently Advertised	20
The Motor Transport Clearing House	21
Latest Methods and Devices for Removing the Static Hazard of Gasoline Distribution	24
What is the Cause of Most Bearing Failures?	25
Cultivate This New Truck Sales Field	26
Truck Sales Increase Includes Every Section of Country	28
Possibilities for Truck Exportation Somewhat Brighter	31
How This Dealer Did a Gross Business of Nearly Two Million in Three Years	40
Hourly Price Reduction Program Draws Profits	68

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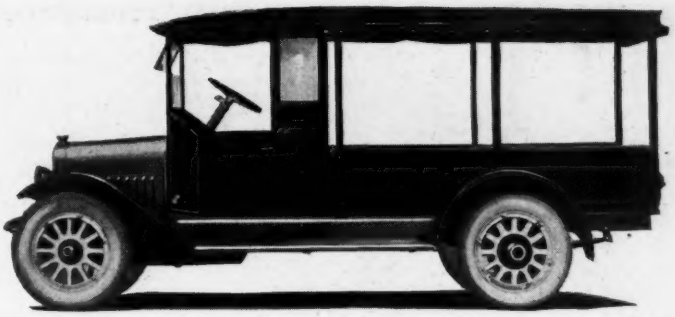


Combination D—Shows extension canopy top, including full set of curtains for the body—an extremely rigid, well designed top, all ironing being of pressed steel with gussets to eliminate forward and side sway.

There Are 74 Others

From one set of Wilson-Built Standardized Units, 75 combinations of bodies can be assembled—rigid, serviceable, handsome bodies, fitting a truck exactly to the work it is to do.

This line ends the need for buying custom built bodies and for maintaining big, intricate stocks. It reduces inventory of inert stock and cuts warehousing requirements, yet makes you ready to meet any demand. It means quicker turnover; bigger profits.

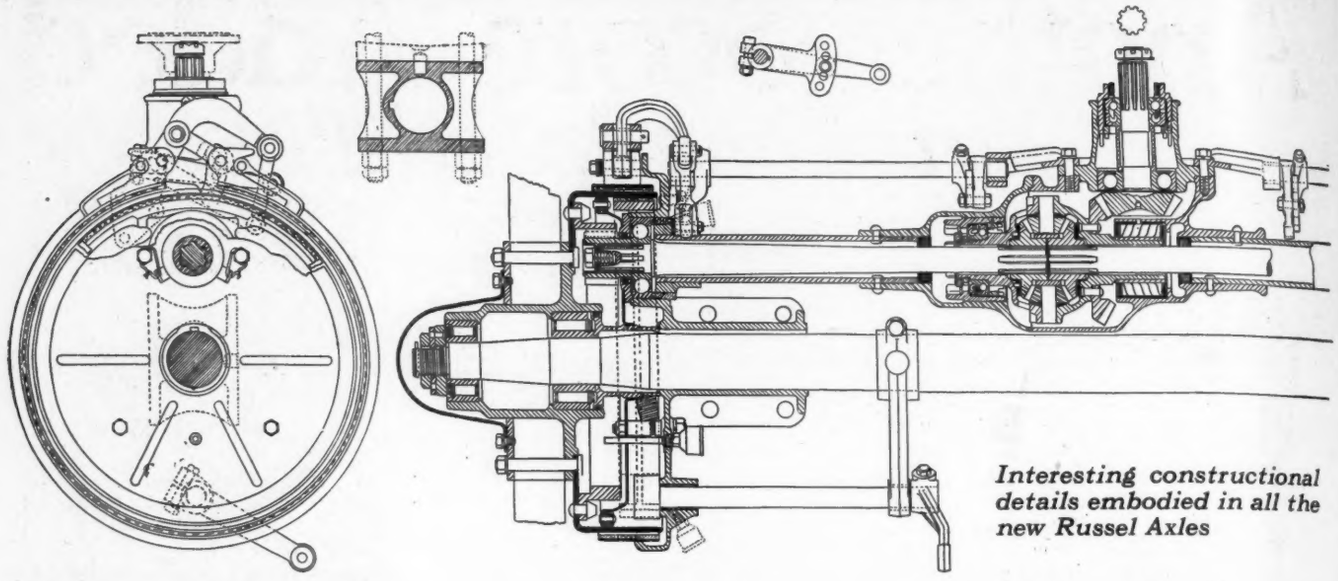
Every unit is Wilson-Built to Wilson standards of high quality, accurate workmanship, and economical production.

This line places you in a position to make big money in the truck field.

Write Today for Bulletins 1-B and 3

C. R. WILSON BODY CO.
DETROIT BAY CITY
MICHIGAN

WILSON BUILT BODY
C. R. WILSON BODY CO. Detroit



Interesting constructional details embodied in all the new Russel Axles

A Few Details of the New Russel Axle Construction

The "dead" or load-carrying axle is a one-piece member of chrome-nickel steel. Turned from bar stock before heat treatment, it provides tremendous strength at points where needed.

Wheel gears are completely enclosed—positively dustproof.

Improved design of 4 pinion differential with nickel-steel gear and **drop-forged heat-treated cases.** An exclusive Russel feature.

Jackshaft pinion is mounted in such a manner as to permit easy removal without disturbing jackshaft.

Patented brakes readily accessible for adjustment.

Heavy springs prevent rattling.

Exceptionally Quiet-Working Truck Axles

The unusual quietness in operation of the new Russel Internal Drive Axles provides the progressive truck maker with a distinctive selling feature.

This desirable quietness of operation is achieved by the use of the exceedingly efficient spiral-bevel drive—an exclusive Russel advantage.

This superior construction further provides more tooth contact—which assures the virtual elimination of teeth breakage.

Quality truck builders will find the perusal of the new Russel specifications fully worth while. *Write.*

4 New Models—for 1, 1½, 2 and 2¾ ton trucks
3 New Bevel Drives—¾, 1 and 1¼ ton for speed trucks

RUSSEL MOTOR AXLE CO.
Detroit, Michigan

INTERNAL and BEVEL DRIVE

Russel Truck Axles

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